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ABSTRACT

A study of Spanish-speaking children in the first and third grade showed that English proficiency was least fostered by reading instruction in Spanish only, followed by bilingual instruction, with those students receiving instruction in English only becoming most proficient but still far less so than their English-speaking peers. Besides differences in general proficiency, there were differences in the areas of self concept, general ability, and reading. The gap between English-speaking and Spanish-speaking narrowed by the end of third grade. In the first grade, parents' English proficiency and language preference, and number of children in the family accounted for most of the variance. By third grade, previous school experience appeared to explain the variance. (Author/JB)

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The Effect of Language Used for Early Reading Instruction: A Bilingual Perspective

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and
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September, 1979

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Abstract

The purpose of this research project was to study the effect of different language approaches (native language, second language, and both languages concurrently) used in reading instruction of bilingual children.

Groups of children in first and third grade, learning to read under each of the language approaches described, were followed through a year of schooling. Their achievement was compared to that of a group of "Anglo" children in first and third grade and learning to read in English.

The main questions to be answered through the study were:

1. Do the groups of bilingual children, receiving reading instruction under the different language approaches (Spanish only, English only, and Spanish and English concurrently) showed different effects and/or patterns?
2. How do these "bilingual" groups compare to the group of "Anglo" children learning to read in English?
3. What are the most relevant student, school, and home characteristics which seem to account for success in learning to read in a bilingual setting?

Results showed that the bilingual groups were characterized by significant differences in English proficiency.

The least English proficiency group was receiving instruction only in Spanish while the most proficient group was learning reading only in English. Although significant differences among the bilingual groups in language proficiency were still found at the end of the school year, there was a general trend toward increasing English proficiency. General ability differences which appeared in first grade disappeared by third grade. In English reading, there seemed to be a trend for Group 2 (learning to read in both languages concurrently) to catch up with Group 3 (English only) by the end of third grade. At this point both bilingual groups were reading at the same level, but they were still performing significantly lower than the group of "Anglo" children. Besides the obvious differences between the "bilingual" and "Anglo" groups in language proficiency, there were differences in the area of self-concept, general ability, and reading. Significant age differences appeared in grade three.

The gap between the "bilingual" and the "Anglo" groups, although still significantly different at the end of third grade, was closer than it was at the beginning of first grade.

In regard to the predictability of home and school variables in determining English reading achievement in school, it was found that 1. for first grade, parents' English proficiency and language preference, and number of children in the family accounted for most of the variance explained, 2. by third grade, it was mainly previous school experience: reading achievement, and language proficiency what accounted for most of the variance explained.

Implications of research findings for bilingual education programs and for future research are discussed in the report.

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I. Reading research: Theoretical perspective

Research in reading is not something new to cognitive psychology. Research done in late nineteenth and early twentieth centuries (Blumenthal, 1970) already identified reading as a complicated cognitive process involving more than just the identification and combination of letters to make up words, phrases, and sentences.

In the middle 1920's though, research in reading took a turn away from the cognitive psychology realm and moved toward a pedagogical research base. The main issue then, became one of the teaching methodologies used and their effect on the learning of reading.

One of the first people to bring reading research back into cognitive psychology, Gibson (1970), describes four principal stages that underline the learning of reading, namely: a) the acquisition of oral language; b) the recognition of letters; c) the grapheme-morpheme relationships; and d) the recognition and use of higher order structures. Other people looking at the reading process from within the same perspective are: Fries (1963), Kolers (1973), Gough (1972), and La Berge and Samuels (1974).

In contrast, Goodman (1967) and Smith (1973) proposed a psycholinguistic view of reading where reading is seen as a psycholinguistic guessing game and the process of reading involves the derivation of meaning from the context. Goodman sees reading as a process in which meaning is decoded from a linguistic medium. It is not a linguistic or a thinking process in itself.

The view of reading supported by Gibson (1970), Kolers (1973), Gough (1972), and La Berge and Samuels (1974) is recognized as the "bottom up" view of reading, while Goodman (1967) and Smith's (1973) view is recognized as the "top down" one.

In contrast to these views of reading, newer theories of reading acquisition, Massaro (1975) and Rumelhart (1976), have tried to integrate and complement the two views described above. Thus, Rumelhart (1976) sees reading as "...the process of understanding written language. It begins with a flutter of patterns on the retina and ends (when successful) with a definite idea about the author's intended message." p. 1. His model of reading is an interacting model. Rumelhart believes that the non-interacting models have been developed because a formal explanation of how these interactions accurred has been lacking.

II. Research in first and second language reading

In general, theories and research in reading are directed toward first language learners and very little has been done to study the reading process in a second language. Much of the research directed to monolingual readers attempts to study the sensibility of children and/or adults to semantic and syntactic constraints as opposed to the graphic information. Specifically, studies have analysed the types of errors made by children, Goodman (1970) and Weber (1970). Kolers (1970) found that adult readers were more sensitive to contextual (syntactic and semantic) constraints than to graphic information. Meyer, et al. (1974) and Tulving, et al (1964) did experimental studies on the effect of semantic constraints in the perception of individual words and found that these constraints facilitate word perception. Some studies have compared the reading performance of good and bad readers and described characteristics of their performance. Golinkoff (1975) found that good readers pay little attention to the graphic aspects of the text; they rather use the contextual information more effectively. Biemiller (1970) has described strategies in the use of contextual versus graphic information used by first grade readers and discovered some sequential regularity in an occurrence of the strategies.

In regard to second language reading, very little has been done. Nicolson (1977) and Mes-Prat and Edwards (1978) studied the sensibility of second language readers to orthographic constraints. Their subjects were French-English bilinguals. Other studies with bilingual subjects such as MacNamara (1968) suggest that second language readers have difficulty using contextual constraints. Furthermore, Stafford (1976) and Young (1972) studied reading errors in second language readers and they both found that these readers can not fully use contextual constraints while reading so they rely more on the graphics of the text. Oller (1972) studied strategies such as eye movement and fixation used by second language readers to compensate for their lack of knowledge of the language, and he found differences in the processing of information in the short-term memory.

Hatch (1974) and Hatch, et al (1974) used a letter cancellation technique to compare native and non-native speakers of English use of contextual and graphic information while reading. These studies showed that the non-native speakers of English were using the graphic information in the text more than the native speakers were.

Very few studies in second language reading have been carried out in classroom settings. Tucker (1975) studied reading comprehension longitudinally on children attending French immersion programs in Canada. His findings suggest that: 1) The subjects were good on word-discrimination in spite of their poor knowledge of grammar. 2) Different processess and strategies are used by first and second language readers; namely a) second language readers used more word-descrimination than the first language readers to compensate for their lack of contextual knowledge, and b) second language readers relied more on graphic information. This last strategy has already been suggested by Stafford (1976), Young (1972), Oller (1972), and Hatch (1974). A study by Cziko (1978) compares first language and second language readers at different levels of proficiency with seventh grade subjects in a bilingual French-English setting. His findings suggest that: a) The beginning language students were sensitive to syntactic but not to semantic constraints in reading . b) The intermediate group was not sensitive to French discourse constraints and made more use of visual than contextual information than either the advanced or the native group. c) The advanced group was better in visual discrimination and the native speakers were better in vocabulary than the other groups.

Swain (1974) found that children attending immersion programs who were introduced to reading in French before English, transferred more reading skills from French to English reading than the ones who learned first in English and then in French.

Studies by Cummins (1976), Cziko (1976), and Tucker (1975) found a correlation between second language and native language reading skills. This finding seems to indicate that the effective use of contextual information in reading is transferable but it is not consistent with the current view that second language reading is dependent on the overall proficiency in the second language.

Through the years, several people have been interested in the effect of learning to read in the native language (L1) vs. the second language (L2). Engle (1975) reviewed studies done in this area and found that most of the studies she reviewed presented flaws in design and/or implementation. Engle's summary in regard to the effect of the language used for instruction as seen in these studies is inconclusive. She found that while some of the studies showed the L1 approach to learning reading produced greater gains (Modiano, 1968; Modiano, 1972; Ramos et al, 1967; UNESCO, 1953), a comparable number of studies showed the L2 approach as being more effective (Lambert and Tucker, 1972; Pozas and Pozas, 1956; Malherbe 1956). Cziko (1976) has studied the effect on the language sequence used to teach reading to bilinguals and found no significant effects that would allow them to determine which sequence is better. More recently, some researchers (Bowen, 1977; Tucker, 1977) have argued the need to look at social rather than linguistic and pedagogical factorns in order to explain the academic achievement of bilingual children. Bowen (1977) suggests that there are enough data available to show that the language medium of instruction does not necessarily determine academic success. Furthermore, he suggests that the language medium of instruction should be determined according to social rather than linguistic characteristics of the children; Tucker (1977) concludes the same.

A study carried out by UNESCO (Skutnabb-Kangas and Toukomaa, 1976) seems to show that the introduction of a second language of instruction to children who still lack development in their native language could be counterproductive. This could lead to "semilingualism" (a term used to describe children with low proficiency in the native and second languages) and this problem, in turn, will produce low achievers.

Cummins (1979) suggests that the level of competence attained by bilingual children in both languages could be an intervening variable in regard to the effect of bilingualism on the cognitive and academic development of these children. Cummins suggests that two thresholds occur in the development of bilingual subjects. If children show a low level of proficiency in both languages they are at the lower threshold of bilingual competence and the cognitive effects of this situation are negative especially in terms of achievement. In the case of children who are bilingual but who show dominance and native-like competence in one language, their bilingualism will not produce either positive or negative cognitive effects. In contrast, children who have higher levels of competence in both native and second language will show positive cognitive effects in their learning and academic achievement. Cummins (1979) proposes that the competence a child develops in the second language is partially a function of the type of competence in the first language that the child attained when he was first exposed to the second language. In turn, Cummins refers to studies done by MacNamara, Svare and Homer (1976) and Skutnabb-Kangas and Taukomaa (1976), which support his interdependence hypothesis which suggests that the linguistic experience in the home is a pre-requisite for acquiring literacy skills and that the ability to extract meaning from printed text can be transfered easily from one language to another. Cummins' interdependence hypothesis will explain that the relatively greater success achieved through native language instruction, as shown by studies done in minority language situations, may be due to the fact that some aspects of the minority child's native language were not fully developed on entry to school. In other words, the child does not have the necessary cognitive and linguistic development to learn and to succeed in a second language medium of instruction.

III. Statement and rationale of the problem

During the last twelve years the enactment of the Bilingual Education Act into the Elementary and Secondary Education Act of 1965 has produced increasing public interest in bilingual education as a way to serve the needs of children whose native language is other than English. Up to now, many decisions made in regard to the design and management of these programs have been based on personal intuitions rather than on research data. The need for a sound research base on decision-making in this area is very much needed. With such a base, the programs will better serve the needs of culturally and linguistically different children in the United States.

Although several studies have been carried out in second language reading, most of them involved adult or college level population and/or were developed in settings outside the United States: Tucker (1975), Cummins (1975), Czicko (1976), Cziko (1978), Cowan and Sarmed (1976), Sezanson and Hawkes (1976). Most of the research done in second language reading has looked at the use of context versus graphics in bilinguals: MacNamara (1970), Young (1972), Stafford (1976), Théberge (1972), Hatch, et al (1974), Oller (1972), and Tucker (1976). These studies indicate that second language readers rely more on graphic than on contextual information while they are reading. Other studies (Cummins, 1976; Cziko, 1976; and Tucker, 1975) found a correlation between second and native language reading skills.

Research by Goodman (1965), Biemiller (1970), and Golinkoff (1975-76), which studied the characteristics of good and bad readers, seems to show that one of the problems with poor readers is that they do not use their knowledge of the oral language while they are reading. In contrast, it seems second language learners lack knowledge of their second language and this may underline their low reading performance.

Language knowledge appears to be a prerequisite for reading (Fathman, 1972 and Oller, 1972); however, data from Canada (Swain, 1974) show that there is not a direct relationship between the language one learns to read in and subsequent reading ability. It was found that more transfer of reading skills occurred among children who learned to read first in French (their second language) and then in English, than in the children who learned to read first in English (their second language) and then in French. Studies by Cummins (1976) and Cziko (1976) did not find a significant relationship between language sequencing for reading instruction and reading achievement in a second language. The same studies found no relationship between language sequencing in beginning reading and the transfer of reading skills across languages. These results may be affected by the type of populations used in these studies. Middle-class subjects from well established families learning the language of a minority were the major populations studied. Research done in Sweden (Skutnabb-Kangas and Toukoma, 1976) with low socio-economic status finnish immigrants suggests that native language development is a prerequisite for literacy in the first as well as second language of the child. This supports the view that children who do not have developed the first language well when they get to school should be taught in the native language in school to increase their chances of school success in the native as well as their second language.

Although all these studies have shed some light on the problem of learning to read and literacy in a bilingual situation, very few of them have been carried out with elementary school children in the United States. This study explores the effect of the language used for early reading instruction in children participating in Spanish-English bilingual programs in the United States.

The population who attends bilingual programs in the United States is different from most of the populations studied in the research projects described above. Bilingual students in the United States usually belong to a low socio-economic level and many of them are newcomers to the country.

The parents of these children lack education and skills to help them in their school work, in spite of their willingness to do so. They can help the children very little in regard to role models and adult aspirations. The fact that non-English speakers in the United States have to learn the language of the majority may also affect the language minorities learning.

The present research project addresses one of the areas in which research is needed in bilingual education; namely, reading in a bilingual school setting. Specifically, we have tried to study the effect of different language approaches (native language, second language or both languages concurrently) used in reading instruction with bilingual children. Through the study, the effect of some home variables that may account for reading achievement have been explored and the findings will be discussed later.

The main questions we have tried to answer through this study are:

1. Do the groups of bilingual children (Groups 1, 2, and 3) learning to read under different language approaches show different effects or patterns?

2. How do the "bilingual" groups (Group 1, 2, and 3) compare to the group of "Anglo" children (Group 4)?

3. What are the most relevant student, school, and home characteristics which seem to account for success in learning to read in a bilingual setting?

IV. General procedures

A - Design

To study the effect of language used for reading instruction, the reading progress of children in first and third grades receiving reading instruction under the different language conditions was followed. Four groups for each first and third grade were compared. Each group had the following treatment characteristics:

Group 1. A group of limited English ability children attending a bilingual program and learning to read in the native language only.

Group 2. A group of limited English ability children attending a bilingual program and learning to read in the native language and English at the same time.

Group 3. A group of limited English ability children attending a bilingual program and learning to read in English only.

Group 4. A group of "Anglo" children learning to read in English only, who are not in a bilingual program.

Besides reading achievement data, information on English and Spanish language proficiency, verbal and non-verbal ability, age, sex, and different home and school variables were collected.

The purpose of this research was to determine the effect of the conditions of early reading instruction and other home and school variables on the learning of reading of bilingual children at different levels of English proficiency.

Children during the first year of formal reading instruction and in the third grade were chosen for the study since by age eight, according to Bloom (Andersson and Boyer, 1970), the child has acquired about 80% of his intellectual functioning. It seems that there exists an empirical breaking point arbitrarily established at third grade. According to teachers, they see a great change in bilingual children at this stage of their schooling, and they feel this change should be reflected in curriculum design for bilingual programs.

B - Instruments

The following instruments were administered to the subjects participating in the study.

1. Language proficiency data were collected through the Functional Language Survey. This instrument was developed by the Chicago Board of Education to determine the language proficiency of Low English Proficiency Skills (LEPS) children as required by Civil Rights guidelines. The Survey as originally developed places a child in one of the five English proficiency levels defined by the Lau Guidelines. Children rated in the lower three levels of English proficiency are the ones considered in need of bilingual education.

2. Reading data were collected by using the Test of Reading from Guidance Testing Associates, St. Mary's College, San Antonio, Texas. This is a series of reading tests which has parallel forms in Spanish and English. The series has pre- and posttest forms so that it is possible to measure the same reading skill levels but through different items each time. The tests come in 5 levels of difficulty. Level 1 measures vocabulary and comprehension and Levels 2-5 measure vocabulary, comprehension, and speed of comprehension.

Although these tests are old, State of Illinois norms for the tests were developed in 1976 and the tests have shown high reliability in the State (see Cohen and Rodríguez-Brown, 1977 and Rodríguez-Brown, 1977).

For the purpose of the present study, Level 1 of the test was administered as a posttest to first graders in the language of their reading instruction. Level II was administered to third graders in the language of reading instruction as pre- and posttests by using different forms each time.

3. Data in regard to general ability of the subjects in verbal and non-verbal behavior was collected by using the Test of General Ability for Guidance Testing Associates, St. Mary's College, San Antonio, Texas. This

test has 6 levels (a Pre-school level and levels 1 through 5), for an age range from 4 to 18 years old. This test gives an estimate of the subjects' general ability. Each level yields a separate score for verbal, numeral, and non-verbal ability at the lower levels (Pre-school through 2) and a verbal, non-verbal and a numerical score for levels 3-5.

As in the reading test described above, this series of tests has parallel forms in Spanish and in English, and it has pre- and posttest forms of equal difficulty at each level. For the purpose of the study, Level 1 of the Test of General Ability was administered to first graders and Level 2 to third graders at the beginning of the school year 1978-79. The test was administered to the group by reading the instructions in Spanish and English at the same time. The "Anglo" group was given instructions only in English.

The results from this test determined significant differences in general ability among the groups involved in the project. The same data may be used subsequently to determine the relationship between reading achievement and verbal and non-verbal ability.

4. A measure of self-concept was also administered to the subjects. The test used is the Primary Self-Concept Inventory developed by Douglas G. Muller and Robert Leonetti and published by Teaching Resources, Boston, Massachusetts. This inventory is designed for grades K-6 and it identifies children who have a low self-concept. The test was developed in Spanish and English and it measures and yield scores in 3 domains: social, personal, and intellectual.

Although the test is administered in a group and each student is supposed to have his/her own booklet, economical constraints made it impossible to buy test booklets for all the children in the project. Using two sets of booklets, the main investigator, who was assisted by several people, administered the test individually and recorded the answers for each child in the sample. This data was also compared to the students' reading achievement.

5. The James Language Dominance Test by Peter James is designed to assess language dominance in Spanish-English bilingual children. It is a test of oral vocabulary in Spanish and in English. Twenty items in each language measure oral production and twenty measure oral comprehension. A difference of 5 points between the two languages determine language dominance in either Spanish or English. This is a pictorial test. The student is either asked to identify orally a pictured object, or he is asked to find the pinture that matches the word spoken by the tester. For our purpose only, the Spanish test was used in the analysis to determine Spanish proficiency of the students in the project. The test was administered individually.

In addition to these tests instruments, questionnaires for parents and teachers were developed. Data collected from parents and teachers in previous projects provided information to enhance the design of close ended multiple choice questions. This makes the questionnaire easier to answer. Some of the independent variables collected through these questionnaires appear in Table 1.

C - Population involved in the study and their characteristics

1. General information

The subjects of this research project were 348 children attending first (N=302) and third (N=145) grades at six schools in two Downstate Illinois school districts. All of the schools involved in the project have been integrated and received some sort of Title I assistance.

Table 1

Independent Variables Data Collected Mainly Through Questionnaires

1. Children
    a. Age
    b. Sex
    c. English Fluency Level (Bilingual children only)
    d. Number of years in mainland (Bilingual children only)
    e. Language used with parents and siblings (Bilingual children only)
2. Home (Bilingual children only)
    a. Place of birth of parents and children
    b. Number of years living in USA mainland
    c. Education of parents
    d. Occupation of parents
    e. Language fluency of parents (English and Spanish)
    f. Language used by different members of the family (i.e. parents to children, children to parents, child to older siblings, child to younger siblings)
    g. Size of family
    h. Neighborhood description
    i. Language most commonly used at home (radio, T.V., etc.)
    j. Attitude of parents toward bilingual programs.
3. Teachers (Bilingual and English)
    a. Age group
    b. Education
    c. Years of experience
    d. Training in reading
    e. Type of courses: methods, principles, psychology of reading.
    f. Attitudes toward bilingual education.
4. Bilingual Teachers Only
    a. Number of years teaching in bilingual program.
    b. Type of program (self-contained, half-day, etc.)
    c. Reading and speaking ability in Spanish and English
    d. If they have other adults in their classrooms (i.e. teacher aide, student, teacher), reading and speaking ability of these adults.
5. Bilingual Program Classroom Data
    a. Number of years the program has been in effect in the district
    b. Number of children in classroom - age range and grade level.
    c. Description of main teaching methods used by the teachers (i.e. total class, interest grouping, special pupil needs groupings, etc.)
    d. Criteria used for grouping
    e. Activities for which they observe bilingual children who speak English predominantly, Spanish predominantly, mixed language.
    f. Language teachers use in the classroom for: 1. demands, 2. directions, 3. informal conversation.
    g. Language used to teach different subjects.
    h. Ratio of students to adults in classroom.
    i. Percent of time children spend in the bilingual classroom.
    j. Language (s) used for reading instruction (English, Spanish, both)
    k. Changes in instructional language. When, why.
    l. Curriculum materials used for reading in Spanish and/or English.
    m. Criteria used to determine reading groups.
    n. Percent of the time that adults in the classroom speak Spanish.
    o. Percent of time children use Spanish during school.
    p. Language use encouraged by teacher.
    q. Classroom contexts where mostly English, mostly Spanish or mixed languages are used.

The bilingual subjects were attending classrooms where reading was taught under 3 different language conditions: Group 1 - in Spanish only, Group 2 - in Spanish and English concurrently, and Group 3 - in English only. Table 2 shows the breakdown of the sample by language used for instruction as well as other relevant variables such as language proficiency level, sex, ethnic background, etc.

To facilitate the reading of this paper, all of the children attending regular English classrooms will be identified as "Anglo" with the understanding that these classrooms included children from diverse cultural background In the same way, children attending the bilingual program will be identified as the "Bilingual" group although the term bilingual does not imply that these children are bilingual. For the most part children participating in the bilingual programs included in the project can be categorized as Spanish native speakers who are learning English and are at different levels of proficiency in the second language.

In Table 2(b) a breakdown of the bilingual children by language proficiency levels is shown. These proficiency levels are defined by the State of Illinois guidelines. Levels I, II, and III imply low English proficiency at different levels while Level IV refers to children who are proficient enough in English to function in an "Anglo" classroom but who show low achievement due to problems related to cultural interference.

2. Home Background Information

Information on the bilingual students' background and language use patterns was provided by the parents' questionnaire. A copy of this questionnaire appears in Appendix A. One hundred twelve persons completed the questionnaire: mothers of the bilingual group students comprised over half of the respondents, fathers a third, and the rest, 12% were others such as neighbors

Table 2

Descriptive Data of Subjects

A. All English classroom sample

1st. Grade

District Sex	1	2	Total
Boys	13	22	35
Girls	8	22	30

3rd. Grade

District Sex	1	2	Total
Boys	10	29	39
Girls	11	26	37

Bilingual Sample Data

B. Language of reading instruction

1st. Grade

District Language	1	2	Total
English	20	7	27
Spanish	44	19	63
Both	48	0	48

3rd. Grade

District Language	1	2	Total
English	33	1	34
Spanish	0	1	1
Both	23	10	33

C. Ethnic origin

1st. Grade

District	1	2	Total	%
Mex.	79	25	104	77.6%
P.R.	23	0	28	20.9%
Other	4	0	4	3.0%

3rd. Grade

District	1	2	Total	%
Mex.	47	12	57	85%
P.R.	10	0	10	15%
Other	0	0	0	0%

D. Language proficiency levels

1st. Grade

District Level	1	2	Total
I	14	9	23
II	33	5	38
III	36	5	41
IV	26	7	33

3rd. Grade

District Level	1	2	Total
I	15	1	16
II	8	5	13
III	13	3	16
IV	20	3	23

E. Sex

1st. Grade

District Sex	1	2	Total
Boys	61	13	74
Girls	50	14	64

3rd. Grade

District Sex	1	2	Total
Boys	25	8	33
Girls	32	3	35

or other relatives of the students in this bilingual group.

Analysis of variance were run on the parents' responses to the questionnaire items, comparing the three bilingual student groups to each other. This was done to determine whether the three groups of bilingual children were initially different from each other in family background characteristics or language usage patters. No significant differences were found between the three treatment groups. Thus, any performance differences between the groups at the conclusion of the study are more likely to be due to the differences in the reading methods used than they were likely to be due to any familial or environmental variability. Table 3 to 7 summarize the results of the ANOVAS.

Table 3

ANOVAS on Family Background Variables
Results

Variable Name	Means Group 1	 Group 2	 Group 3	F Value	Significance Level
a. Mother's schooling	1.55	1.41	1.51	.183	N.S.
b. Father's schooling	1.61	1.36	1.77	1.105	N.S.
c. Mother's occupation	1.57	1.84	2.28	.969	N.S.
d. Father's occupation	2.43	2.17	3.31	1.151	N.S.
e. Number of children in the family	4.18	4.45	6.05	.783	N.S.
f. Other persons in the household	1.88	1.70	1.72	1.600	N.S.

Table 4

ANOVAS on Family Members' Spanish and English Proficiency

Results

Mother	Means			F Value	Significance Level
	Group 1	Group 2	Group 3		
a. Spanish-speaking ability	2.10	2.51	2.00	2.19	N.S.
b. Spanish-reading ability	2.45	2.88	2.44	1.34	N.S.
c. English-speaking ability	4.19	4.36	4.17	2.22	N.S.
d. English-reading ability	4.17	4.35	4.24	.20	N.S.
Father					
a. Spanish-speaking ability	2.11	2.41	1.86	1.37	N.S.
b. Spanish-reading ability	2.39	2.57	2.07	1.34	N.S.
c. English-speaking ability	3.86	3.81	3.84	1.06	N.S.
d. English-reading ability	4.11	4.07	3.81	.64	N.S.
Student					
a. Spanish-speaking ability	3.00	3.21	3.06	.28	N.S.
b. Spanish-reading ability	3.58	3.76	3.34	1.81	N.S.
c. English-speaking ability	3.31	3.76	3.39	4.91	N.S.
d. English-reading ability	3.59	4.09	3.70	6.12	N.S.

7

Table 5

ANOVAS on Family Language Use

Results

Variable Name	Means responses			F Value	Significance Level
	Group 1	Group 2	Group 3		
Mother					
a. Language used at home	Spanish	Spanish	Spanish	7.58	N.S.
b. Language used outside the home	Spanish	Spanish	Spanish	5.74	N.S.
c. Reading language preference	Spanish	Spanish	Spanish	2.24	N.S.
d. TV language preference	Both	Both	Both	1.50	N.S.
e. Radio language preference	Spanish	Spanish	Both	2.88	.04
Father					
a. Language used at home	Spanish	Spanish	Spanish	1.68	N.S.
b. Language used outside the home	Spanish	Spanish	Both	2.75	N.S.
c. Reading language Preference	Spanish	Spanish	Spanish	.88	N.S.
d. TV language preference	Both	Both	Both	.32	N.S.
e. Radio language preference	Spanish	Spanish	Both	1.92	N.S.
Student					
a. Language used at home	Spanish	Spanish	Spanish	1.92	N.S.
b. Reading language preference	Both	Both	Both	.52	N.S.
c. TV language preference	Both	Both	Both	.29	N.S.
d. Radio language preference	Both	Both	Both	.54	N.S.

Table 6

ANOVAS on Language Interaction Patterns within the Family

Results

Variable Name	Means responses Group 1	Group 2	Group 3	F Value	Significance Level
a. Language most used between parents	Spanish	Spanish	Spanish	1.08	N.S.
b. Father-to-child language	Spanish	Spanish	Spanish	.39	N.S.
c. Mother-to-child language	Spanish	Spanish	Spanish	6.37	N.S.
d. Child-to-child	Both	Both	Both	1.04	N.S.
e. Child-to-father	Spanish	Spanish	Spanish	.88	N.S.
f. Child-to-monter	Spanish	Spanish	Spanish	.23	N.S.

Table 7

ANOVAS on Neighborhood Characteristics

Results

Variable Name	Means responses Group 1	Group 2	Group 3	F Value	Significance Level
a. Neighborhood language preference	Both	Both	Both	1.87	N.S.

The overall results of the questionnaire revealed that about half of the families had lived in the United States between 2 and 10 years; close to a third had been in the country under 2 years, while about 17% had lived here over 10 years, including 5 families who reported being U.S. residents all their lives (Table 8A). Before these families arrived in Illinois, most (58%) had lived in Mexico, while 13% had lived in Puerto Rico. A substantial proportion (14%) had lived somewhere in the United States before coming to Illinois. However, we do not know how long they had been in the States before coming to Illinois; conceivably, it could have been merely a brief period.

Parental schooling was low and occupations were, in the whole, blue collar, low socio-economic status. The majority of the mothers and fathers reported that their last year of school had been at the elementary level; however, twice as many fathers than mothers had gone to school beyond the elementary level (Table 8B). Almost all of the fathers held blue collar or unskilled jobs; the majority (58%) of fathers were employed as laborers, while construction and maintenance work comprised most of the rest. Mothers, for the most part, were housewives (61%); about a quarter of them (27%) were working as laborers, and 11% held other (mostly unskilled) jobs (Table 8C).

The families tended to be large: nearly two-thirds of the parents responding (62.5%) had families of four or more children (Table 8D). In addition, three-quarters of these households were composed of the immediate, nuclear family - no other realtives were living with them.

Table 8

Descriptive Characteristics of the Families of the Children Involved in the Project

A.	Length of time in U.S.	N	%
	Under 2 years	38	32.2
	2 - 10 years	60	50.9
	10 - 20 years	15	12.7
	All our lives	5	4.2

B.	Parental occupations	Mother		Father	
		N	%	N	%
	None	5	4.6	7	7.3
	Elementary School	68	63.0	52	54.2
	Junior High School	15	3.9	16	16.7
	High School	17	15.7	16	16.7
	University	3	2.8	.5	5.2

C.	Parental occupations	Mother			Father	
		N	%		N	%
	Deceased	1	.9	Laborer	60	57.7
	Housewife	71	61.2	Construction	20	19.2
	Laborer	31	26.7	Maintenance	13	12.5
	All others	13	11.0	Professional	3	2.9
				Clerical	1	1.0
				Retired	1	1.0
				Others	6	5.8

D.	Number of children in family	N	%
	2 or 3	44	37.6
	4 - 6	55	47.1
	More than 6	18	15.4

3. Spanish and English proficiency of different members of the family

The second part of the questionnaire explored the parents' perceived apeaking and reading proficiency in both Spanish and English. Not only did the parents rate themselves in these variables, they also rated their children (Table 9A to D). Fathers and mothers were very similar in their ability to speak Spanish - around 70% reported either native or good ability, with between 15-19% reporting that they have very little or no ability to speak Spanish. The students, on the other hand, were not as capable as their parents: 49% were described as speaking Spanish very little or not at all; only 38% were reported to have "good" or native ability. The ability to read Spanish showed a similar pattern: a majority of the parents were able to read Spanish at a "good" or a native level (although fathers did rate themselves higher than mothers), while the majority of the students (57%) were able to read Spanish very little, if at all. Of course, the age of the students no doubt played a part in these ratings -- first and third graders are not very proficient readers as a rule.

English-speaking and reading abilities were rated very low for all-- mothers, fathers, and the students themselves. Three-quarters or more of the parents said they had very little or no ability to speak or to read English; the students were seen to be better than the parents in English speaking and reading.

Table 9

L1 and L2 Language Proficiency of Different Members of the Family

	Mother		Father		Student	
	N	%	N	%	N	%
A. Spanish-Speaking Ability						
Native	30	27.8	31	31.0	8	7.1
Good	48	44.4	38	38.0	35	31.0
Adequate	14	13.0	10	10.0	16	14.2
Very little	10	9.3	14	14.0	47	41.6
Do not speak at all	6	5.6	5	5.0	7	6.2
B. Spanish-Reading Ability						
Native	20	18.2	18	18.2	5	4.6
Good	47	42.7	52	52.5	24	26.9
Adequate	11	10.0	4	4.0	17	15.7
Very little	25	22.7	20	20.2	24	22.2
Do not read it at all	7	6.4	5	5.1	38	35.2
C. English-Speaking Ability						
Native	5	4.4	2	1.9	3	2.8
Good	10	8.8	16	15.4	23	21.1
Adequate	3	2.6	8	7.7	17	15.6
Very little	33	28.9	50	48.1	53	48.6
Do not speak it at all	63	55.3	28	26.9	13	11.9
D. English-Reading Ability						
Native	4	3.7	2	2.0	5	4.5
Good	11	10.1	12	12.2	10	9.0
Adequate	3	2.8	7	7.1	20	18.0
Very little	26	23.9	33	33.7	47	42.3
Do not read at all	65	59.6	44	44.9	29	26.1

4. Language usage at home and in the neighborhood

The third section of the questionnaire dealt with the family's language use: what language is used where and with whom? Table 10A to E shows some descriptive data on this area. The language most often used at home by parents and students was Spanish, although the students were a little more likely (23% vs 3% and 5%) to use English. The majority of both fathers and mothers used Spanish most frequently out of the home, too. The language preference for leisure time activities was assessed: the parents prefered to read and to listen to radio in Spanish; the majority of the students were perceived by their parents to prefer to read in English and to listen to English-language radio stations. TV watching was different: most of the fathers and students preferred to watch TV in English, the mothers were about evenly divided between the two languages. This may be a reflection of the greater number of English TV programs or the greater interest of those programs.

When the ANOVA results were examined, we found one item on which there was a significant difference between the three groups of parents: the mother's radio language preference. Mothers of Group 1 (reading learned only in English) and Group 2 children (reading learned only in Spanish) preferred to listen to Spanish radio programs; the mothers of Group 3 children (learning to read in both languages concurrently) said that they liked to listen to both Spanish and English programs. Although the difference between groups was significant only for this item, yet two other items showed the same pattern, although to a non-significant degree: the language father uses out of the home, the father's radio language preference.

Large interaction patterns within the family indicated that Spanish continues to be the language used almost exclusively between the parents,

Table 10

Language Use Patterns

	Mother		Father		Student	
	N	%	N	%	N	%
A. Language Most Frequently Used at Home						
Spanish	108	93.9	95	93.1	81	70.4
English	4	3.5	5	4.9	27	23.5
Both	3	2.6	2	2.0	7	6.1
B. Parental Language Use Outside of Home						
Spanish	97	82.9	69	66.3		
English	16	13.7	28	26.9		
Both	3	2.6	6	5.8		
C. Reading Language Preference						
Spanish	95	82.6	79	79.0	25	25
English	13	11.3	14	14.0	67	67
Both	7	6.1	7	7.0	8	8
D. TV Language Preference						
Spanish	54	48.2	31	31.3	13	11.3
English	45	40.2	62	62.6	98	85.2
Both	11	9.8	5	5.1	4	3.5
Other	2	.5	1	1.0		
E. Radio Language Preference						
Spanish	89	78.8	65	65.0	35	33.7
English	17	15.0	30	30.0	67	64.4
Both	6	5.3	5	5.0	2	1.9
Other	1	.9	-	-	-	- -

Table 11

Language Interaction Patterns in the Family

A. Language Most Frequently Used between Parents

	N	%
Spanish	108	92.3
English	6	5.1
Both	3	2.6

B. Parental Language Most Frequently Used with Children

	Mother		Father	
	N	%	N	%
Spanish	101	93.5	102	91.1
English	4	3.7	6	5.4
Both	3	2.8	4	3.6

C. Language Most Frequently Used between Siblings

	N	%
Spanish	59	51.8
English	44	38.6
Both	11	9.6

D. Language Children Most Frequently Use with Parents

	Mother		Father	
	N	%	N	%
Spanish	91	85.8	92	86.0
English	6	5.7	9	8.4
Both	9	8.5	6	5.6

and between parents and their children (Table 11A to D lists some of these data). Although most of the children (85%) used Spanish predominantly with their parents, considerably fewer of the children (51%) used Spanish predominantly with their siblings. In fact, parents reported that 39% of these students used English predominantly with their brothers and sisters. This language mixing occurred with children in all three of the treatment groups. Thus, even if a child was learning to read in Spanish, the language of so many household interactions, he or she still tended to use Spanish and English when speaking to their siblings.

A good number of these families (51%) lived in neighborhoods where English was the major language; only 40% said that Spanish was the predominant language of their neighborhood. Even so, 60% reported that their neighbors tended to come from Spanish-speaking countries.

The picture was of families with very strong ties to their Spanish heritage; the children were also most competent with the Spanish language, although the shift to English was beginning. They tended to use English with younger siblings and chose English more frequently for leisure time activities.

5. Teachers' background information

Eighteen teachers were involved in the current project: twelve were teachers in bilingual programs while six were regular "Anglo" classrooms teachers. Half of these teachers taught first grade and half taught third grade. Information relevant to these teachers and their classrooms was collected through a questionnaire. (See Appendix B).

Background information on the teachers, which was summarized in Table 12, indicated that over three-quarters of these teachers were between 20 and 40 years old and that half of them had a bachelor's degree. Eight teachers also had their master's degree. All but one reported that they had taken reading courses as part of their teacher training programs; in fact, two-thirds of the teachers had taken three or more reading courses during their training. In addition, the teachers in the study were fairly experienced: two-thirds had been teaching five years or more.

The bulk of the questionnaire was designed for the bilingual teachers (N=12). Table 13 summarizes some of the data in regard to L1 and L2 proficiency of the bilingual teachers. These teachers had been teaching in their current districts a relatively short period of time: two-thirds of them had been there between one and three years. The level of language facility is an important consideration for a teacher in a bilingual program. All of the bilingual teachers said that they could speak both Spanish and English. When asked to rate the level of their speaking ability in each language, 83% reported that they had "good" or "native" ability in Spanish, and 92% said the same thing about their English capabilities. It is interesting that, on the whole, the teachers rated their English abilities higher than their Spanish abilities. Perhaps this is because they were trained in English-speaking schools. The bilingual teachers were also asked to rate the speaking abilities of any other adults in their classrooms (such as teacher's aides). A third did not respond to this question, but of those who did, the aides were judged relatively competent in both languages, although somewhat more proficient in Spanish.

A major portion of the questionnaire dealt with information about the bilingual classrooms. Ten of the 12 bilingual teachers said that bilingual programs had been in their districts for a minimum of seven years (the other two teachers did not respond to this question), and that their classrooms

Table 12

Teachers' Personal Information

		N	%
A.	**Ages**		
	20 - 30 years old	8	47.1
	31 - 40 years old	6	35.3
	40+ years old	3	17.6
B.	**Highest Degree Earned**		
	B.A.	9	50
	M.S., M.A., M.ed.	8	44.4
	Ph.D.	0	- -
C.	**Years of Teaching Experience**		
	1 - 3 years	3	16.7
	3 - 5 years	3	16.7
	5 - 10 years	9	50.0
	10+ years	3	16.7
D.	**Bilingual Teachers' Years in District's Bilingual Program**		
	1 - 3 years	8	66.7
	4 - 6 years	3	25.0
	7+ years	1	8

Table 13

Bilingual Teacher's L1 and L2 Ability

A. Self-Rating of Spanish-Speaking Ability (N=12)

	N	%
Native	6	50
Good	4	33.3
Adequate	2	16.7
Very little	0	0
Does not speak at all	0	0

B. Bilingual Teacher's Self-Rating of English-Speaking Ability (N=12)

Native	7	58.3
Good	4	33.3
Adequate	0	0
Very little	1	8.0
Does not speak at all	0	0

C. English-Speaking Ability of Other Adults in the Classroom (N=8)

Native	3	37.5
Good	3	37.5
Adequate	2	25

4 teachers did not answer question

all contained children at a number of grade levels.

Non-bilingual, Anglo teachers all had a few bilingual students in their classrooms - four of the six Anglo teachers had four to six bilingual students, and one had as many as eight. The Anglo teachers had up to 26 English-speaking or English-dominant children in their classrooms. Nine of the 12 bilingual teachers in the study shared their classroom with another adult, usually a teacher's aide. The ratio of students per adult in the bilingual class was 17. Most of the bilingual teachers had multiple-grade classrooms.

6. Language use in the bilingual classroom

The language use of the bilingual students and teachers in various situations was explored: teachers observed that their bilingual students used English predominantly as might be expected, in ESL class; the students used Spanish predominantly (again, predictably) during Spanish language arts; they tended to mix the two languages in the subject matter areas. A summary of this information appears in Table 14. The bilingual teachers used Spanish and English separately, mainly to teach Spanish and Enlgish language arts; they used both languages together primarily to teach aritmetic, arts and crafts, and to introduce new concepts. All in all, more than half of the bilingual teachers said that they used Spanish in the classroom 50% of the time, or less. The opposite was true of their students: half of the bilingual teachers observed that the children used Spanish 60% of the time or more. When the bilingual programs first began in these schools, most of the students learned to read both languages at the same time. Now, a minimun of seven years later, the students first develop an oral base in the first language in which they are to read.

Table 14

Classrooms Information as Reported by Teachers

A. Percentage of Time Adults Use Spanish in the Bilingual Classroom (N=10)

	N	%
20 - 30%	2	20
31 - 40%	2	20
41 - 50%	3	30
51 - 60%	0	0
61 - 70%	1	10
90+ %	2	20
No responses	2	

B. Percentage of Time Children use Spanish (N=11)

	N	%
40 - 50%	5	41.4
60 - 70%	2	18.2
71 - 80%	2	18.2
90+ %	2	18.2
No responses	1	

C. Language Use Encouraged by Teachers (N=12)

	N	%
Spanish	1	8.3
English	3	25.0
Mixed (Spanish-English)	8	66.7

7. Teachers views of bilingual education programs

All 18 of the teachers in the study were asked the final group of questions, which included their views of the goals and success of the bilingual programs. Information in this area appears in Table 15. The teachers identified three goals they believed to be the purpose of bilingual programs: 1) that bilingual programs are meant to provide an atmosphere conducive to growth and to encourage achievement; 2) that bilingual programs are meant to enable students to learn English and eventually to move into an all-English program; and 3) that bilingual programs are meant to help the children function in both cultures and languages. The teachers then listed the things they liked the most and the least about bilingual programs. Most of the teachers found that the children were the most positive aspect of bilingual programs. Negative aspects included the too-large classes with students at many different grade and proficiency levels; the lack of coordination and communication with the students' regular teachers; and the lack of flexibility to meet students' needs. The desired changes the teachers mentioned most often were that there be more parental involvement in the bilingual programs and that there be increased communication with other school personnel.

The majority of the teachers felt that the parents by and large approved of the bilingual programs. In addition, the teachers mentioned changes they had noticed in the students as a result of the programs: over half of the teachers felt that the bilingual students had an improved self-concept as a result of the programs and that they were able to speak better English. A substantial number also said that the children seemed to be happier, and that they showed improvement in both their oral and written communication.

Table 15

Teachers' Views on the Effect of Bilingual Programs (Maximun N=18)

A. Student Changes as a Result of the Bilingual Program

	N (Multiple Responses)	%
Better self-concept	11	61.1
Speak English better	9	50
Better attitudes, happier	7	38.9
Improvement in oral and written communication	6	33.3
Children more willing to speak Spanish	5	27.8
Does better in all subject areas	4	22.2
More desire to share knowledge	2	11.1
Enhance pride in culture and language	1	5.6

B. Teachers' Perceptions of Parental and Community Assessment of Bilingual Programs

Approval	4	25.0
Approval/involved in activities	4	25.0
Approval/ask questions	2	12.5
Do not care	2	12.5
Hostile	2	12.5
Do not know	2	12.5
No response	2	

Note: This questions permitted the teachers to give multiple answers.

V. Data collection

All the children involved in the project were pretested in October 1978. The tests were administered by individuals who had been previously trained. As much as possible, two test administrators were present in each classroom when a test was given to facilitate the process and make sure the children understood the task.

The Test of General Ability was administered first to both grades. Since the test was long, a break was given after the first two parts. The instructions in Spanish and English given to the bilingual children were always given in the same order and by a different individual who was a native speaker of the language.

About one week later, the Reading Test Level 2 was given to third graders.

The same process was followed, except instructions were given in the language of the test (Spanish or English). Children who were receiving instruction in both languages were given two tests of reading, one in Spanish and one in English, using parallel forms. These tests were given one week apart.

Finally, the Self-Concept Test and the Functional Language Survey were given individually to each student. The Self-Concept Test was given in the language preferred by the child while the Functional Language Survey was given only in English.

Besides this testing, parent questionnaires were sent out to all parents of bilingual children involved in the project. Teachers were given a questionnaire asking for information in regard to their training, their perception of reading instruction, classroom management and attitudes

Table 16

Tests - Grades, Groups and Languages Used for Administration

		Pre - Test					Post - Test			
		Functional Language Survey (FLS)	General Ability	Self-Concept	Reading English	Reading Spanish	Functional Language Survey (FLS)	James Lang.Dom. Spanish Form	Reading English	Reading Spanish
First Grade	Group 1 Spanish only	English	English and Spanish	English and Spanish	- -	- -	English	Spanish	- -	Spanish
	Group 2 Spanish and English concurrently	English	English and Spanish	English and Spanish	- -	- -	English	Spanish	English	Spanish
	Group 3 English only	English	English and Spanish	English and Spanish	- -	- -	English	Spanish	English	- -
	Group 4 "Anglo"	- -	English	English	- -	- -	- -	- -	English	- -
Third Grade	Group 1 Spanish only	English	English and Spanish	English and Spanish	- -	Spanish	English	Spanish	- -	Spanish
	Group 2 Spanish and English concurrently	English	English and Spanish	English and Spanish	English	Spanish	English	Spanish	English	Spanish
	Group 3 English only	English	English and Spanish	English and Spanish	English	- -	English	Spanish	English	- -
	Group 4 "Anglo"	- -	English	English	English	- -	- -	- -	English	- -

toward culturally and linguistically different children. Table 1 shows a list of variables for which information was collected through the questionnaires.

On May 1979 the children were posttested. First graders were administered the Test of Reading Levell from Guidance Testing Associates. Third graders were administered the same test but Level 2. Group 2 children were given the test in Spanish and in English. Since the test has parallel forms, the test given in Spanish and English were different forms of the same test. Group 3 and 4 were given the test in English only and Group 1 took the test in Spanish only.

Subsequently, each child in the bilingual program (Groups 1, 2, and 3) was tested individually in Spanish and English proficiency. The Functional Language Survey was administered to determine the level of English language proficiency. This survey was given by a native English speaker. The James Language Dominance Test-Spanish form was then administered as a measure of Spanish language proficiency. This test was given individually by a native Spanish speaker.

The same procedures as for pretesting were used for posttesting. Table 16 shows a breakdown of the tests administered to the children participating in the project and the language used for testing.

VI. Data analysis

Table 17 shows a list of variables and their respective abbreviations. Frequencies of occurrance of scores per group and per grade and correlations were calculated for all the variables included in the study. Furthermore, ANOVA's were carried out using the SPSS breakdown program (NIE et al.1975).

Table 17

Testing Variables

PRLGPROF - Pretest English Language Proficiency
GAPART 1 - General Ability-Oral Vocabulary Subtest
GAPART 2 - General Ability-Number Subtest
GAPART 3 - General Ability-Classification Subtest
GAPART 4 - General Ability-Analogies Subtest
GATOT - General Ability Total Score
SCDOM 1 - Self Concept - Personal Domain
SCDOM 2 - Self Concept - Social Domain
SCDOM 3 - Self Concept - Intellectual Domain
SCTOT - Self Concept - Total
PRERPT 1 - Pretest English Reading - Comprehension Subtest
PRERPT 2 - Pretest English Reading - Speed Subtest
PRERPT 3 - Pretest English Reading - Vocabulary Subtest
PRERTOT - Pretest English Reading - Total
PRSRPT 1 - Pretest Spanish Reading - Comprehension Subtest
PRSRPT 2 - Pretest Spanish Reading - Speed Subtest
PRSRPT 3 - Pretest Spanish Reading - Vocabulary Subtest
PRSRTOT - Pretest Spanish Reading - Total
PTLGPROF - Posttest English Language Proficiency
SPANCOMP - James Language Dominance - Comprehension Subtest
SPANPROD - James Language Dominance - Production Subtest
SPANTOT - James Language Dominance - Total
PTERPT1 - Posttest English Reading - Comprehension Subtest
PTERPT2 - Posttest English Reading - Speed Subtest
PTERPT3 - Posttest English Reading - Vocabulary Subtest
PTERTOT - Posttest English Reading - Total
PTSRPT1 - Posttest Spanish Reading - Comprehension Subtest
PTSRPT2 - Posttest Spanish Reading - Speed Subtest
PTSRPT3 - Posttest Spanish Reading - Vocabulary Subtest
PTSRTOT - Posttest Spanish Reading - Total

Results from these ANOVAS provided information as to whether there were significant differences among the four groups' means. Since a lot of significant differences were found to be due to the much higher means for Group 4 (the "Anglo" group), ANOVAS were run comparing only the three bilingual groups. ANOVAS were used to determine the significance of the covariates and the group pre-post gains in English language proficiency and reading. Analysis of covariance was not chosen as the main methodology used for analysis because of the potential sources of bias incurred in the pretest. As explained by Werts and Linn (1971), if there are preexisting differences in the group means in the covariate the reduction in the slope may lead to bias in regard to the magnitude of the treatment effects.

In the case of Group 2 children who were given the reading test in Spanish and in English, a series of t-tests were calculated by subtest to compare the means and determine if there were significant differences among them. Finally, regression analyses were carried out for most of the data analysis.

On choosing multiple regression as the main statistical technique used in this study, considerable attention was given to the wording of questions to be answered in the study. Although we were trying to study the effect of using different language approaches in teaching reading to bilinguals, we have tried not to explain these effects in terms of gains or difference scores. These measures would seem to be the most natural measure of change but present major problems. Bereiter (1963) and Thorndike (1976) discuss the fact that difference scores usually show a negative correlation with the pretest. This implies that large positive difference scores will be observed more with low pretest scores while subjects with a high pretest score will rarely present a large difference or gain score.

Another problem with gain scores is that they show low reliability

(Lord, 1963). One way to avoid the low reliability would be to have a low correlation between the pre- and posttest scores. Finally, even in the use of parallel forms of a test for pre- and posttesting, Linn, et al. (1977) believe..."it is sometimes the case that different constructs are measured at two points in time. For example, an item which measures problem-solving skills at one point may measure memory at a later point in time." (p. 124).

In contrast to gains (difference scores) and covariance, according to Linn et. al. (1977) "regression analysis that treat the pretest no different from other independent variables (or predictors), and the posttest as the dependent variable avoid many of the difficulties that are introduced by gain scores" (p. 248). Besides, in the use of multiple regression for analysis of data, the form of relationship among the data is not constrained according to Cohen and Cohen (1975). In other words; the relationship could be lineal or curvilineal, simple or complex. Variables may be characterized by missing data. The nature of the independent variables involved in the analysis may be quantitative or qualitative. The variables may be single or groups of variables, and they may be expressed as research factors. Due to the characteristics described above and the nature of the questions we were trying to answer (especially the multiple relationship between home and school variables and reading skills) regression seemed to be the most desirable statistical technique to be used in the analyses.

Taking all these factors into consideration, the following regression analyses were done with the data.

For Grade 1, the following variables were included in the regression analyses: PTERPT1 (Posttest Comprehension), PTERPT3 (Posttest Vocabulary), PTERTOT (Posttest Reading), PRLGPROF (Pretest Language Proficiency), PTLGPROF (Posttest Language Proficiency), SPANTOT (Spanish Proficiency), GAPART1

(Numbers), GAPART2 (Oral Vocabulary), GAPART3 (Analogies), GAPART4 (Classification), GATOT (General Ability), SCTOT (Self Concept), Sex, Age, Group 1, Group 2, Group 3. These analyses compared Groups 1, 2, and 3 only. First, PTERTOT (Posttest English Reading Total) was included as the criterion variable while GAPART1, GAPART2, GAPART3, GAPART4, PRLGPROF, SCTOT, Sex, Age, and Group were predictors. Group was introduced as a dummy variable, as specified in the SPSS Manual (NIE et al, 1975). These variables were introduced into the analyses in hierarchical or stepwise manner, according to the order it was thought they will effect the learning of reading. The group variable was introduced last. Subsequently, multiple regression analyses were done for each of the reading subtests PTERPT1 and PTERPT3 (Comprehension and Oral Vocabulary), SPANTOT and PTLGPROF.

For third grade, regression analyses were done introducing each PTERTOT and PTLGPROF individually as criterion variables. Predictor variables included are: PRERTOT, GAPART2, GAPART3, GAPART4, GAPART1, PRLGPROG, SCTOT, Sex, Age, and Group. Again these variables were introduced hierarchically or stepwise and the group variables were introduced last as dummy variables.

Finally, for first and third grade, multiple regression analyses were carried out where home as well as achievement and school related variables were introduced as predictors. Before choosing the home variables, a careful check of the correlation among these variables was done to eliminate those variables that could account for problems of multicollinearity, namely interpretation, sampling stability, and computation in the analyses.

Tables 18 and 19 show the variables introduced in these analyses and their correlations with one another for grades 1 and 3. These analyses were carried out to determine the predictive nature of the school and home variables in explaining reading achievement under the conditions studied.

Table 18

Correlations among different variables
included in the multiple regression analysis

Grade 1

	PTERTOT	PTERPT 1	PTERPT 3	PRLGPROF	GAPART 2	GAPART 3	GAPART 1	SCTOT	FSCHOOL	MSPAN	FSPAN	MFENG	MSCHOOL	NCHILD	USLIVE	SPREF	CHLANG	NBORENG	FCHLANG	MPREF	FPREF	SBIRTHP	SHOMELG	CHMLANG	NBORCUN	GROUP 1	GROUP 2
PTERTOT	1.00																										
PTERPT 1	.84	1.00																									
PTERPT 3	.86	.71	1.00																								
PRLGPROF	-.00	.07	-.02	1.00																							
GAPART 2	.23	.13	.22	.27	1.00																						
GAPART 3	.16	.13	.16	.45	.45	1.00																					
GAPART 1	.04	-.03	.02	.26	.58	.53	1.00																				
SCTOT	.00	.03	-.02	.24	.22	.17	.20	1.00																			
FSCHOOL	.04	-.07	-.01	.22	-.02	.11	-.10	-.08	1.00																		
MSPAN	.27	0.19	.17	-.07	.13	.11	-.11	.31	-.31	1.00																	
FSPAN	.30	0.30	.30	-.11	.18	.14	-.07	.38	-.29	.84	1.00																
MFENG	.16	0.18	.09	-.30	.24	.01	.09	.24	-.46	.27	.44	1.00															
MSCHOOL	-.08	-.03	-.11	.17	.07	.02	-.01	.02	.45	-.22	-.40	-.61	1.00														
NCHILD	.04	-.07	-.05	-.11	-.03	-.15	-.03	.02	-.25	-.01	-.01	.02	-.16	1.00													
USLIVE	-.13	-.07	-.07	.35	-.20	.14	-.01	-.14	.17	-.36	-.35	-.45	.30	.08	1.00												
SPREF	.05	-.02	-.01	.49	.41	.41	.22	.14	.29	-.18	-.15	-.40	.33	.06	.23	1.00											
CHLANG	-.14	-.07	-.09	.45	.11	.15	.04	-.10	.05	-.15	-.18	-.36	.16	.15	.31	.55	1.00										
NBORENG	.10	-.02	.08	-.03	-.05	.08	.01	-.20	.27	-.00	-.09	-.12	-.02	-.25	-.14	.10	.08	1.00									
FCHLANG	.08	-.18	.03	-.03	-.18	-.24	-.18	-.26	.15	-.18	-.22	-.35	.06	-.11	.13	.27	.13	.09	1.00								
MPREF	-.06	-.00	.00	.20	.06	.15	-.05	.15	.18	.10	-.03	-.34	.41	-.19	.20	.42	.28	-.07	-.01	1.00							
FPREF	-.08	-.15	-.04	.18	.07	.11	.08	.26	.36	-.14	-.12	-.30	.20	-.28	-.00	.52	.05	.26	.17	.43	1.00						
SBIRTHP	-.03	.03	-.04	.51	.08	.16	.02	.01	.15	-.10	-.24	-.45	.28	-.13	.57	.37	.40	.07	.05	.15	.02	1.00					
SHOMELG	.06	-.11	-.09	.30	.17	.09	.01	-.12	.20	.08	-.11	-.52	.26	.02	.07	.47	.58	.06	.22	.27	.13	.28	1.00				
CHMLANG	.03	.05	.02	.22	-.06	.12	.13	.11	.05	.05	-.17	-.50	.48	-.13	.29	.08	.15	.08	-.07	.29	.03	.43	.12	1.00			
NBORCOUN	.03	-.09	-.00	.03	.06	.08	.23	-.19	.10	.08	-.14	-.09	.22	-.17	-.03	.08	-.02	.37	.17	-.01	.11	.04	.08	0.39	1.00		
GROUP 1	.15	.30	.07	.53	.07	.25	.11	.05	.17	-.05	-.04	-.10	.12	-.15	.04	.02	.25	.03	-.16	.05	-.01	.05	.00	.15	-.02	1.00	
GROUP 2	.02	.01	-.01	-.62	-.16	-.26	-.14	-.16	-.31	.14	.16	.15	-.11	.14	-.11	-.25	-.38	-.04	.03	-.18	-.12	-.30	-.21	-.10	-.01	-.70	1.00

Table 19

Correlations among different variables included in the multiple regression analysis

Third Grade

	PTERPT 1	PTERPT 2	PTERPT 3	PTERTOT	PRERPT 1	PRERPT 2	PRERPT 3	PRERTOT	GAPART 1	GAPART 2	GAPART 4	SCTOT	FSPAN	MSPAN	MFENG	MSCHOOL	FSCHOOL	NCHILD	USLIVE	SHOMELG	MFPREF	FPREF	SPREF	SBIRTHPL	CHLANG	NBORENG	GROUP 1
PTERPT 1	1.00																										
PTERPT 2	.63	1.00																									
PTERPT 3	.79	.43	1.00																								
PTERTOT	.94	.74	.89	1.00																							
PRERPT 1	.70	.65	.60	.77	1.00																						
PRERPT 2	.60	.30	.57	.60	.54	1.00																					
PRERPT 3	.70	.41	.72	.74	.68	.45	1.00																				
PRERTOT	.81	.56	.77	.86	.89	.70	.89	1.00																			
GAPART 1	.14	.01	.18	.14	-.05	-.17	-.01	-.10	1.00																		
GAPART 2	.17	.11	[illegible]	.19	.14	-.04	.11	.10	.21	1.00																	
GAPART 4	.31	.26	.32	.35	.20	.19	.18	.19	.35	.47	1.00																
SCTOT	.03	.20	.14	.14	.20	.04	.16	.17	.10	.05	.16	1.00															
FSPAN	-.26	-.21	-.23	-.28	.05	.04	-.04	.01	.14	-.43	-.49	-.09	1.00														
MSPAN	-.23	-.16	-.10	-.20	-.09	-.08	-.02	-.07	.07	-.40	-.45	-.02	.91	1.00													
MFENG	-.08	.17	-.19	-.06	.15	-.07	-.13	-.03	-.18	-.27	-.29	.25	.44	.37	1.00												
MSCHOOL	-.05	-.13	-.10	-.11	-.19	-.07	-.02	-.08	.37	.06	.16	-.04	-.15	-.16	-.51	1.00											
FSCHOOL	.03	-.12	.11	0.01	-.08	-.04	.05	-.01	.32	.08	.31	-.17	-.31	-.32	-.67	.81	1.00										
NCHILD	-.24	-.38	-.49	-.42	-.28	-.02	-.35	-.29	.26	-.15	-.21	-.13	.39	.39	-.04	-.14	-.23	1.00									
USLIVE	.23	.29	.18	.27	.64	.36	.45	.58	-.21	-.04	.16	-.17	-.21	-.28	-.09	-.14	-.01	-.26	1.00								
SHOMELG	.51	.43	.35	.51	.43	.33	.48	.50	.07	.00	.19	.04	-.05	-.03	-.10	-.12	-.04	-.02	.17	1.00							
MFPREF	.05	-.08	.22	.09	-.33	-.24	-.14	-.27	.23	.05	.27	-.26	-.21	-.14	-.78	.39	.44	.07	-.15	.05	1.00						
FPREF	.12	.04	.34	.21	-.14	-.02	.09	-.01	.20	.06	.39	-.18	-.35	-.28	-.70	.38	.55	-.17	.10	-.01	.68	1.00					
SPREF	.42	.42	.33	.46	.27	.28	.39	.37	.04	-.18	-.01	-.22	-.07	-.10	-.25	.18	.05	.09	.49	.28	.16	.26	1.00				
SBIRTHPL	.21	.13	.44	.33	.38	.04	.23	.28	-.12	-.09	-.11	.05	.22	.10	-.01	-.13	-.02	-.22	.64	-.12	-.09	.12	.32	1.00			
CHLANG	.68	.63	.55	.73	.67	.41	.61	.68	.07	-.12	-.05	-.01	-.02	.04	-.03	-.03	-.04	-.23	.51	.58	-.06	.19	.42	.39	1.00		
NBORENG	.23	.14	.13	.19	-.02	.02	-.02	-.03	.01	-.02	.11	.03	-.12	.01	-.06	-.11	.07	-.03	.24	.32	-.05	-.03	.19	.11	.40	1.00	
GROUP 1	.19	.17	.17	.21	0.60	0.34	.46	.57	-.11	.12	-.00	.02	.08	0.00	-.02	-.04	-.09	-.08	.58	.18	-.04	-.14	.47	.49	.36	-.00	1.00

These analyses were done by introducing the variables in an stepwise modality due to the predictive rather than explanatory nature of the questions to be answered through the analyses results.

VII. Results

To better follow the results section, the reader is referred to Table 17 for the complete name of the variables and their abbreviations. Tables 20 and 21 show the N, Mean, and Standard Deviations for the testing variables included in the analyses for Grades 1 and 3 respectively.

A - Summary of results for analyses of variance

Tables 22 and 23 show significant findings for Grade 1 and Grade 3 when the bilingual only or the four groups are compared.

1. First grade pretesting

For Grade 1 ANOVAS were carried out to compare the different groups for each variable showing the following results.

1. The data showed no significant age difference in months among the four different groups.

2. There were significant differences ($F=43.5$, $P<0.001$) in language proficiency among the three bilingual groups (Group 1 < Group 2 < Group 3).

3. The Test of General Ability showed no significant differences among the bilingual groups for GAPART1 (Oral Vocabulary) and GAPART2 (Number) subtests but it showed significant differences for GAPART3 (Classification) ($F = 5.07$, $P<0.01$) and GAPART4 (Analogies) ($F = 3.65$, $P< 0.05$) and GATOT

Table 20

Means and Standard Deviations

First Grade

Variables	Group 1			Group 2			Group 3			Group 4		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
PRLGPROF	82	1.09	1.1	20	3.2	1.0	28	3.8	0.7	NA	NA	NA
GAPART1	74	16.4	3.6	18	17.3	2.7	22	17.4	1.9	64	19.0	2.7
GAPART2	74	7.7	3.1	18	8.9	2.5	22	8.4	1.7	64	11.4	2.2
GAPART3	74	12.6	4.6	18	14.2	3.3	22	15.8	3.2	64	16.2	2.5
GAPART4	74	9.4	4.5	18	10.5	4.1	22	12.2	3.4	64	13.7	3.6
GATOT	74	46.4	12.4	18	50.9	10.2	22	53.8	7.7	64	60.2	7.2
SCDOM1	74	4.1	1.6	19	5.2	1.0	26	4.4	1.3	60	4.5	1.2
SCDOM2	74	2.9	1.2	19	3.4	1.4	26	3.2	1.5	60	3.5	1.6
SCDOM3	74	4.8	1.4	19	4.5	1.6	26	4.8	1.3	60	5.6	1.0
SCTOT	74	11.7	2.8	19	13.1	3.1	26	12.4	2.4	60	13.7	6.9
PTLGPROF	76	3.0	1.2	23	4.4	0.6	32	4.3	1.0	NA	NA	NA
AGE	76	87.3	7.0	23	85.9	5.3	33	87.8	7.7	56	85.2	5.2
SPANCOMP	52	13.3	4.0	20	16.9	2.1	9	16.9	1.4	NA	NA	NA
SPANPROD	52	16.2	4.1	20	19.8	0.4	9	19.3	0.7	NA	NA	NA
SPANTOT	73	30.3	7.4	20	36.7	2.4	32	36.1	7.2	NA	NA	NA
PTERPT1	NA	NA	NA	20	4.8	5.4	22	12.4	7.0	60	25	10.2
PTERPT2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PTERPT3	NA	NA	NA	20	13.3	10.5	22	15.5	6.5	60	27.4	9.3
PTERTOT	NA	NA	NA	20	18	14.2	22	28	12.3	60	52.4	18.7
PTSRPT1	51	8.9	7.2	15	10.1	4.5	NA	NA	NA	NA	NA	NA
PTSRPT2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PTSRPT3	51	14.3	10.3	15	12.5	5.7	NA	NA	NA	NA	NA	NA
PTSRTOT	51	24.0	18.1	15	22.5	9.1	NA	NA	NA	NA	NA	NA

NA = Did not take that test or subtest

Table 21

Means and Standard Deviations

Third Grade

	Variables	Group 1			Group 2			Group 3			Group 4		
		N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
Pre-Test	PRLGPROF	Not enough data	Not enough data	Not enough data	34	2.3	1.00	34	3.35	1.0	NA	NA	NA
	GAPART1				32	18.3	2.9	27	18.0	2.9	59	22	3.7
	GAPART2				32	16.7	5.8	27	15.6	4.3	69	18.0	4.5
	GAPART3				32	12.4	2.6	27	13.1	3.5	69	14.8	3.3
	GAPART4				32	10.1	2.6	27	10.1	3.6	69	11.0	3.4
	GATOT				32	57.6	10.4	27	56.8	10.5	69	65.9	11.5
	SCDOM1				33	4.3	1.2	32	4.9	1.2	74	4.8	1.3
	SCDOM2				33	3.4	1.4	32	3.4	1.1	74	4.3	1.4
	SCDOM3				33	5.5	0.9	32	5.0	1.2	74	5.6	0.8
	SCTOT				33	13.2	2.5	32	13.3	2.5	74	14.6	2.5
	PRERPT1				27	12.8	4.1	24	19.0	4.3	75	25.9	6.2
	PRERPT2				27	6.0	2.7	24	6.2	3.2	75	12.8	4.9
	PRERPT3				27	16.6	5.5	24	22.1	5.5	75	30.6	6.6
	PRERTOT				27	35.4	10.4	24	49.7	10.5	75	69.4	15.9
	PRSRPT1				28	17.0	5.7	NA	NA	NA	NA	NA	NA
	PRSRPT2				28	8.2	4.6	NA	NA	NA	NA	NA	NA
	PRSRPT3				28	24.0	6.9	NA	NA	NA	NA	NA	NA
	PRSRTOT				28	49.2	15.0	NA	NA	NA	NA	NA	NA
Post-Test	PTLGPROF				29	3.4	1.1	29	4.6	0.9	NA	NA	NA
	AGE				30	116.1	10.0	26	114.4	8.4	67	108.5	5.5
	SPANCOMP				12	15.8	2.2	12	17.2	4.8	NA	NA	NA
	SPANPROD				12	18.7	1.8	12	18.8	3.7	NA	NA	NA
	SPANTOT				29	34.4	4.4	24	37.8	6.1	NA	NA	NA
	PTSRPT1				21	16.9	5.9	23	19.4	6.8	73	29.2	5.9
	PTERPT2				21	8.1	4.3	23	9.6	4.8	73	14.4	5.5
	PTERPT3				21	20.9	6.5	23	23.4	7.3	73	32.4	6.7
	PTERTOT				21	45.9	13.2	23	52.4	17.4	73	76.1	16.2
	PTERPT1				29	21.3	6.4	NA	NA	NA	NA	NA	NA
	PTERPT2				29	10.1	4.5	NA	NA	NA	NA	NA	NA
	PTERPT3				29	27.1	6.0	NA	NA	NA	NA	NA	NA
	PTSRTOT				29	56.8	14.8	NA	NA	NA	NA	NA	NA

NA= Did not take the test

Table 22
Pre-Posttest ANOVA Results
First Grade

	Variables	Group Means				All Groups Compared			Bilingual Groups Compared		
		Group 1	Group 2	Group 3	Group 4	F	DF	Sig	F	DF	Sig
Pre Test	PRLGPROF	1.9	3.1	3.8	-				3.6	2,127	**
	GAPART1	16.4	17.3	17.4	18.9	8.334	3,174	**	1.3	2,111	N.S.
	GAPART2	7.7	8.9	8.4	11.4	24.70	3,174	**	1.6	2,111	N.S.
	GAPART3	12.6	14.2	15.8	16.2	11.76	3,174	**	5.1	2,111	N.S.
	GAPART4	9.4	10.5	12.2	13.7	13.51	3,174	**	3.7	2,111	*
	GATOT	46.4	50.9	53.8	60.2	22.1	3,174	**	4.0	2,111	*
	SCDOM1	4.1	5.2	4.4	4.6	3.72	3,175	**	4.6	2,116	**
	SCDOM2	2.9	3.4	3.2	3.5	2.42	3,175	N.S.	1.6	2,116	N.S.
	SCDOM3	4.8	4.5	4.8	5.6	6.69	3,175	**	0.4	2,116	N.S.
	SCTOT	12.7	13.1	12.4	13.7	5.86	3,175	**	2.1	2,116	N.S.
Post Test	PTLGPROF	3.0	4.4	4.3	-				21.7	2,128	**
	AGE	87.4	85.9	87.8	85.2	1.72	3,84	N.S.	0.54	2,129	N.S.
	SPANCOMP	13.3	16.9	16.9	-				9.8	2,78	**
	SPANPROD	16.2	19.8	19.3	-				9.8	2,78	**
	SPANTOT	30.4	36.7	36.1	-				11.6	2,122	**
	PTERPT1	-	4.8	12.4	24.9	49.61	3,122	**	15.8	1,40	**
	PTERPT2	-	-	-	-	-	-	-	-	-	-
	PTERPT3	-	13.2	15.5	27.4	36.3	3,122	**	0.7	1,40	N.S.
	PTERTOT	-	18.0	27.9	52.4	48.65	3,122		5.9	1,40	*
	PTSRPT1	8.9	10.1	-	-				0.7	2,64	N.S.
	PTSRPT2	-	-	-	-				-	-	-
	PTSRPT3	14.3	12.5	-	-				1.1	2,64	N.S.
	PTSRTOT	23.2	22.5	-	-				0.8	2,64	N.S.

** = $p < 0.01$
* = $p < 0.05$
N.S.= No significant

Table 23
Pre-Postest ANOVA Results
Third Grade

	Variables	Group Means				All Groups Compared			Bilingual Groups Compared		
		1	2	3	4	F	DF	Sig	F	DF	Sig
Pre-Test	PRLGPROF	Not included in analysis	2.4	3.4	-	-	-	-	17.1	1,66	**
	GAPART1		18.3	18.0	22.0	13.9	3,126	**	0.2	1,57	N.S.
	GAPART2		16.7	15.6	18.0	1.8	3,126	N.S.	0.7	1,57	N.S.
	GAPART3		12.4	13.1	14.6	4.9	3,126	**	0.9	1,57	N.S.
	GAPART4		10.1	10.1	11.0	1.3	3,126	N.S.	0.0	1,57	N.S.
	GATOT		57.6	56.8	65.9	6.8	3,126	**	0.1	1,57	N.S.
	SCDOM1		4.3	4.9	4.8	2.0	3,136	N.S.	4.1	1,63	*
	SCDOM2		3.4	3.4	4.3	4.9	3,136	**	0.0	1,63	N.S.
	SCDOM3		5.5	5.0	5.6	3.5	3,136	**	4.1	1,63	*
	SCTOT		13.2	13.3	14.6	4.1	3,136	**	0.0	1,63	N.S.
	PRERPT1		12.8	19.0	25.9	59.3	2,123	**	27.6	1,49	**
	PRERPT2		6.0	8.2	12.8	30.0	2,123	**	6.7	1,49	**
	PRERPT3		16.6	22.1	30.6	57.2	2,123	**	13.2	1,49	**
	PRERTOT		35.4	49.7	69.4	64.3	2,123	**	23.7	1,49	**
	PRSRPT1		17.0	-	-	-	-	-	-	-	-
	PRSRPT2		8.2	-	-	-	-	-	-	-	-
	PRSRPT3		24.0	-	-	-	-	-	-	-	-
	PRSRTOT		49.2	-	-	-	-	-	-	-	-
Post-Test	PTLGPRCF	Not included in analyses	3.4	4.6	-	-	-	-	17.5	1,56	**
	AGE		116.1	114.4	108.5	13.2	2,120	**	0.5	1,54	N.S.
	SPANCOMP		15.8	17.2	-	-	-	-	0.8	1,22	N.S.
	SPANPROD		18.7	18.8	-	-	-	-	0.0	1,22	N.S.
	SPANTOT		34.4	37.8	-	-	-	-	5.2	1,51	*
	PTERPT1		16.9	19.4	29.2	46.2	2,114	**	1.7	1,42	N.S.
	PTERPT2		8.1	9.6	14.4	15.9	2,114	**	1.3	1,42	N.S.
	PTERPT3		20.9	23.4	32.4	31.8	2,114	**	1.4	1,42	N.S.
	PTERTOT		45.9	52.4	76.1	39.5	2,114	**	2.0	1,42	N.S.
	PTSRPT1		21.3	-	-	-	-	-	-	-	-
	PTSRPT2		10.1	-	-	-	-	-	-	-	-
	PTSRPT3		27.1	-	-	-	-	-	-	-	-
	PTSRTOT		56.8	-	-	-	-	-	-	-	-

** = $P < 0.01$ N.S. = No significant

* = $P < 0.05$

(Total Score) ($F = 4.12$, $P < 0.02$). In GAPART3, Group 1, learning to read only in Spanish, performed significantly lower than Groups 2 and 3. In GAPART4 Group 3 (learning to read only in English) did significantly better than Groups 1 and 2. When Group 4 (the "Anglo" group) was involved in the analyses, significant differences were found among the 4 groups; GAPART1 (Numerals) $F=8.33$, $P < 0.001$; GAPART2 (Oral Vocabulary) $F=24.7$, $P < 0.001$; GAPART3 (Analogies) $F=11.75$, $P < 0.01$; GAPART4 (Classification) $F=13,51$, $P < 0.001$; and GATOT (General Ability) $F=22.09$, $P < 0.001$. The contrast in results is due mainly to the better performance of the "Anglo" group over the "bilinguals."

4. In the area of self concept, a significant difference among the three bilingual groups was found only in the personal domain ($F=4.6$, $P<0.01$). Group 1 showed to be significantly different than Groups 2 and 3. When the Anglo group is introduced in the analyses SCDOM1-Personal, SCDOM3-Intellectual, SCTOT-Total, are significantly different.

2. First grade postesting

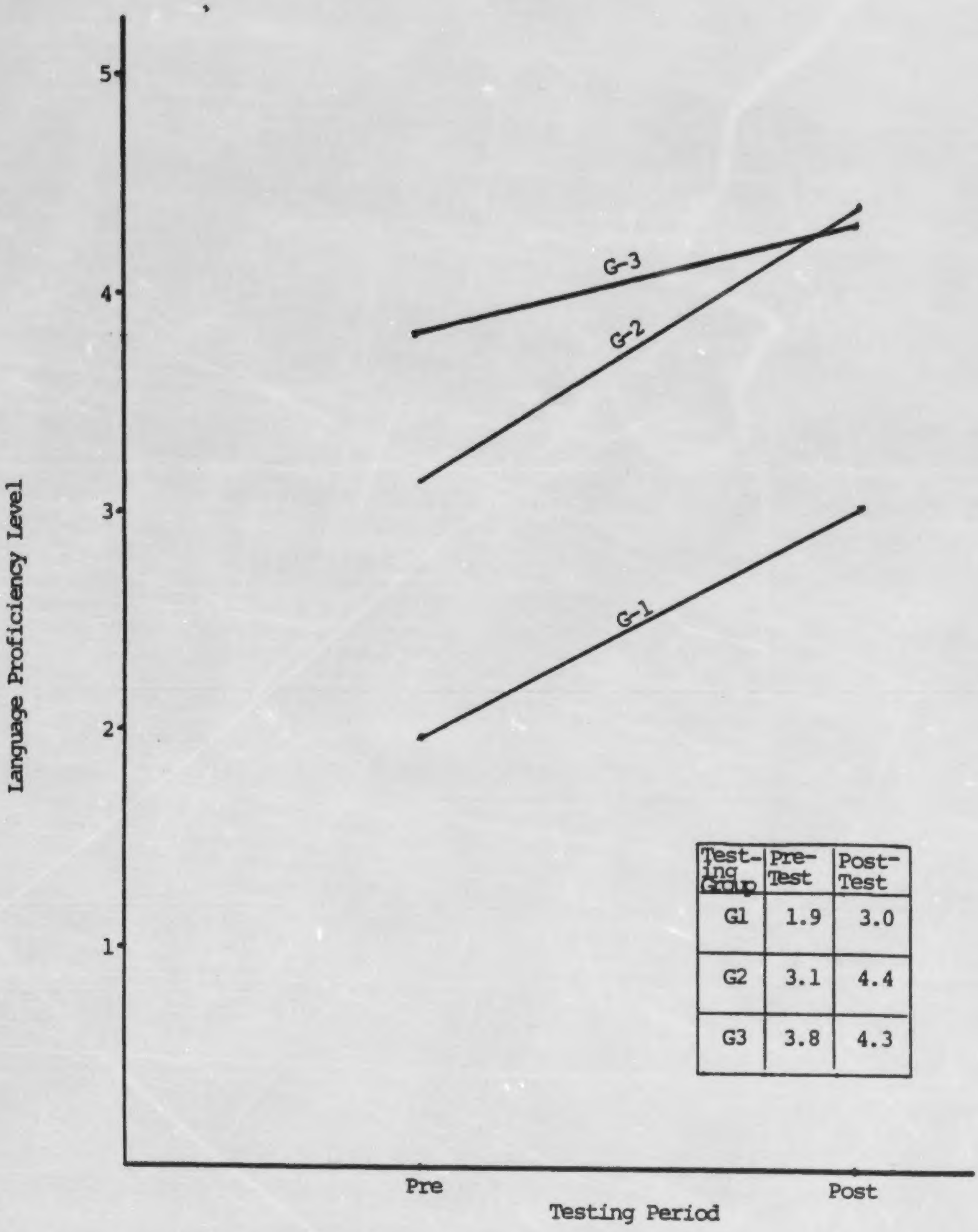
1. At the posttesting significant differences among the three bilingual groups were found in language proficiency (PTLGPROF $F=21.7$, $P < 0.001$ Group 1 < Group 3 < Group 2). The significant difference was mainly between Group 1 and Groups 2 and 3. Figure 1 shows the slopes representing the gain in language proficiency for the three bilingual groups during a school year.

2. A test of Spanish Language Proficiency (Oral Vocabulary) showed significant differences among the bilingual groups in the total (SPANTOT $F=11.56$, $P < 0.001$) as well as in Oral Comprehension (SPANCOMP $F=9.84$, $P<0.001$) and Oral Production (SPANPROD $F=9.8$, $P < 0.001$). Group 1 (Spanish only) was

Figure 1

English Language Proficiency Pre-Posttest Gains

First Grade



Testing Group	Pre-Test	Post-Test
G1	1.9	3.0
G2	3.1	4.4
G3	3.8	4.3

significantly lower than Groups 2 and 3 in this area. This may be due to problems of test administration which will be discussed later.

3. In terms of English reading? there were significant differences among the bilingual groups (2 and 3) in Comprehension (PTERPT1, F=15.83, $P < 0.001$ Group 2 $<$ Group 3) and in the total score (PTERTOT F=5.9, $P < 0.05$ Group 2 $<$ Group 3). There were no significant differences among Groups 2 and 3 in Vocabulary. In general, Group 3 (English only) performed significantly better in comprehension and total score than Group 3 which was receiving instruction concurrently in Spanish and English.

When Group 4 ("Anglo") is introduced in the comparison, significant differences were found in the total score (PTERTOT F=48.65, $P < 0.001$) as well as the subtest PTERPT1 (Comprehension F=36.3, $P < 0.0001$) and PTERPT3 Vocabulary F=48.65, $P < 0.0001$). It is very obvious that Group 4 ("Anglo") outperformed the bilingual groups, although Group 3 did significantly better than Group 2 among the bilinguals, in comprehension and reading in general.

4. In Spanish reading where Groups 1 and 3 were compared, significant differences were not found on their performances although the results showed that Group 2 did better in the comprehension subtest while Group 1 did better in Vocabulary.

5. A t-test carried out to compare performance of Group 2 (Spanish and English concurrently) in English and Spanish showed significant differences in comprehension ($t = 4.81$, $P < 0.001$) but not in vocabulary or the total score. Comprehension scores are higher in Spanish than in English.

3. Third grade pretesting

Group 1 was taken out for analyses purposes since only 2 children were receiving reading instruction only in Spanish.

1. It is important to note that although there were not significant age differences in Grade 1, significant differences in age (in months) appeared by Grade 3. Bilingual children showed to be older than "Anglo" children. This difference was significant ($F=8.2$, $P < 0.001$) between the Group 4 ("Anglo") and the bilingual groups, but not among the bilingual groups.

2. There were significant differences in language proficiency among the bilingual groups ($F=17.12$, $P < 0.001$, Group 1 $<$ Group 2 $<$ Group 3). Figure 2 shows the slopes representing the change from pre- to posttest of the bilingual students in Groups 1, 2, and 3.

3. No difference in general ability was found among the bilingual groups. Differences were found, though, in GAPART1 (Oral Vocabulary) $F=13.8$, $P < 0.001$; GAPART3 (Classification) $F=4.94$, $P < 0.005$) and the total score GATOT ($F=6.76$, $P < 0.001$) when the Anglo group was introduced in the analyses. Group 4 performed significantly better than the bilingual groups.

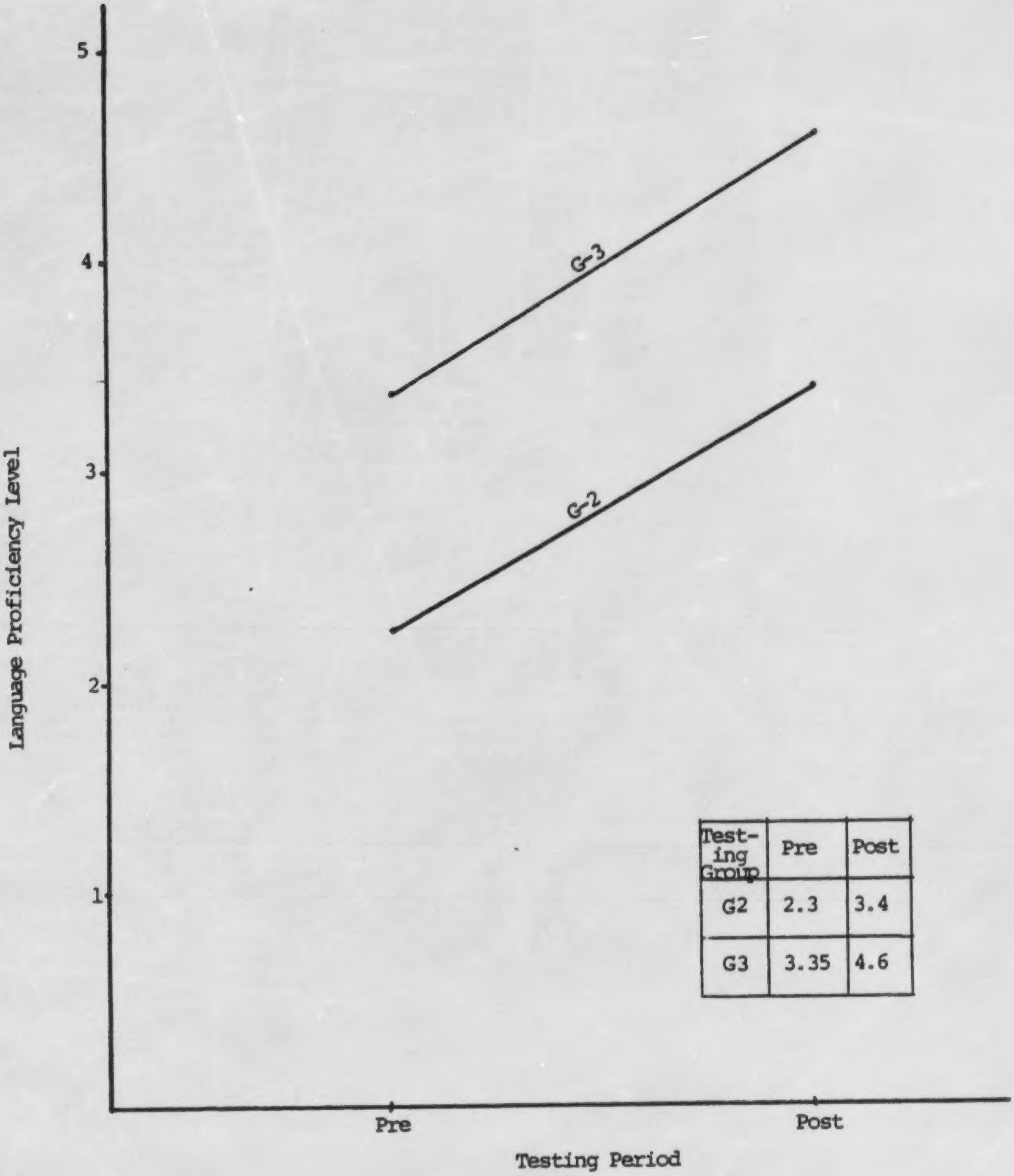
4. In self-concept, there were significant differences between the bilingual groups (2 and 3) in the Personal (SCDOM1 $F=4.12$, $P < 0.05$) and Intellectual (SCDOM3 $F=4.1$, $P < 0.05$) domains. When all groups were compared, these significant differences were found in SCDOM2 (Social $F=4.9$, $P < 0.003$); SCDOM3 (Intellectual $F=3.5$, $P < 0.05$) and SCTOT (Total $F=4.12$, $P < 0.01$) but not at the Personal domain level. Group 4 outperformed the bilingual groups.

5. In English reading there were significant differences in pretest for the total score (PRERTOT, $F=23.7$, $P < 0.001$) and for each one of the subtests individually: Comprehension (PRERPT1, $F=27.63$, $P < 0.001$), Speed of Comprehension (PRERPT2, $F=6.72$, $P < 0.01$), and Vocabulary (PRERPT3, $F=13.2$, $P < 0.001$. Group 2 (Spanish and English concurrently) scored consistently

Figure 2

English Language Proficiency Pre-Posttest Gains

Third Grade



Testing Group	Pre	Post
G2	2.3	3.4
G3	3.35	4.6

lower than Group 3 (English only) in the pretest. When Group 4 ("Anglo") was included in the analyses, significant differences were found among the three groups (2, 3, and 4) in the Total score ($F=64.30$, $P < 0.001$) as well as the three subtests individually (Comprehension $F=59.34$, $P < 0.001$, Speed of Comprehension $F=29.95$, $P < 0.0001$, and Vocabulary $F=57.24$, $P < 0.001$).

4. Third grade posttesting

ANOVAS carried out for the posttesting showed the following trends for third grade.

1. There was a significant difference in language proficiency between the bilingual groups (Group 2 < Group 3);

2. A test of Spanish proficiency (Oral Vocabulary) showed no significant differences in each subtest individually (oral comprehension and oral production) for the bilingual groups but the Total score (SPANTOT) was significantly different ($F=5.2$, $P < 0.03$), Group 3 performed better than Group 2.

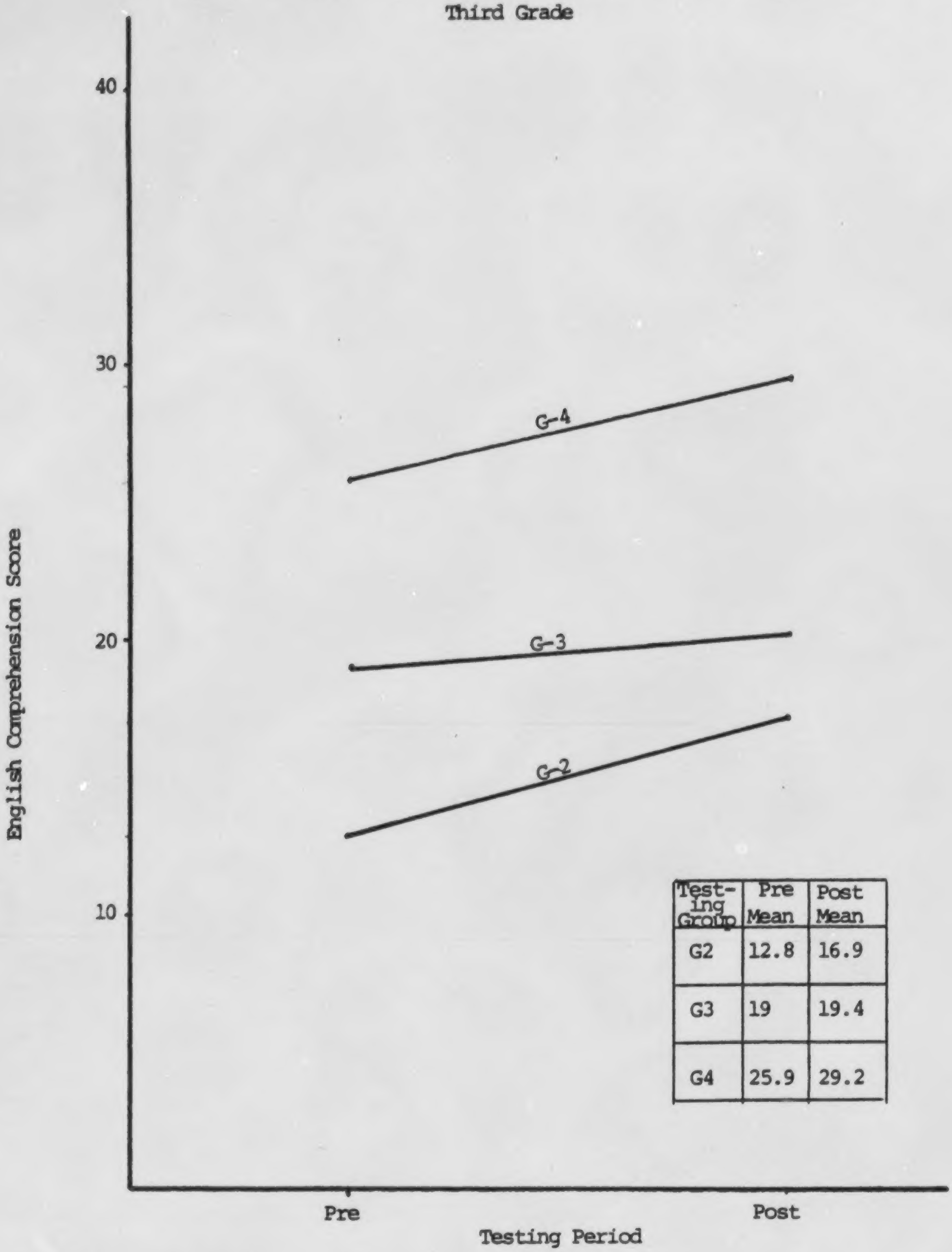
3. In English reading, no significant differences were found in reading (total score and individual subtests) among the bilingual groups (1 and 3) but significant differences were found when Group 4 (Anglo) was introduced in the analyses. PTERPT1 (Comprehension) $F=46.20$, $P < 0.0001$; PTERPT2 (Speed of Comprehension) $F=15.9$, $P < 0.0001$; PTERPT3 (Vocabulary) $F=31.8$, $P < 0.0001$ and PTERTOT $F=39.5$, $P < 0.0001$. Figures 3 through 6 show the trends from pre- to posttest for third graders in the total reading score as well as the subtests.

4. As in the pretest, Group 1 performed better in Spanish than in English in the posttest in Comprehension ($F= 3.23$, $P < 0.004$), Vocabulary ($F= 5.64$, $P < 0.0001$) and in the Total score ($F= 2.69$, $P < 0.01$). There were no significant differences between Spanish and English for the post-

Figure 3

English Reading Comprehension Subtest/Pre-posttesting Gains

Third Grade

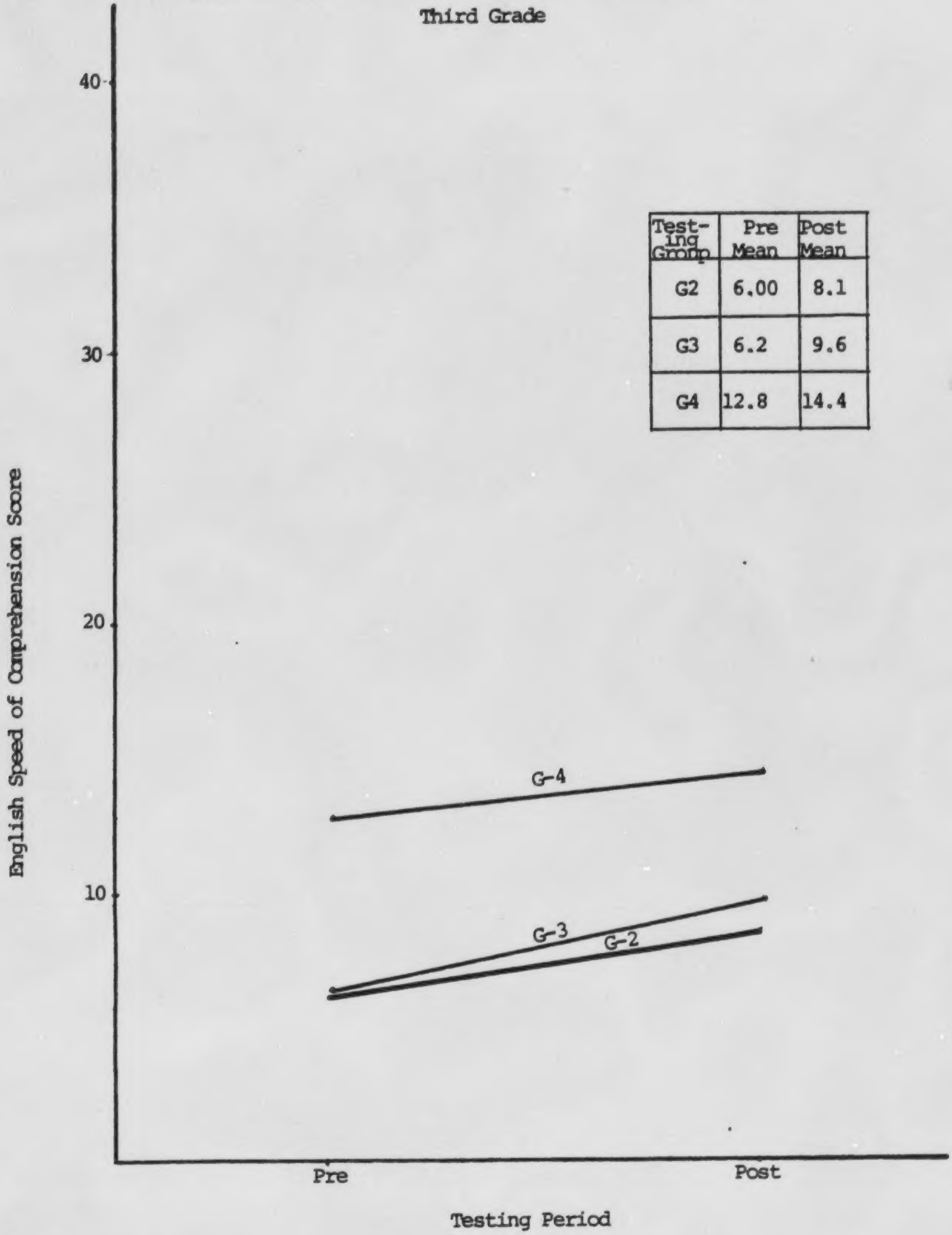


Testing Group	Pre Mean	Post Mean
G2	12.8	16.9
G3	19	19.4
G4	25.9	29.2

Figure 4

Speed of Comprehension Subtest/Pre-Posttesting Gains

Third Grade

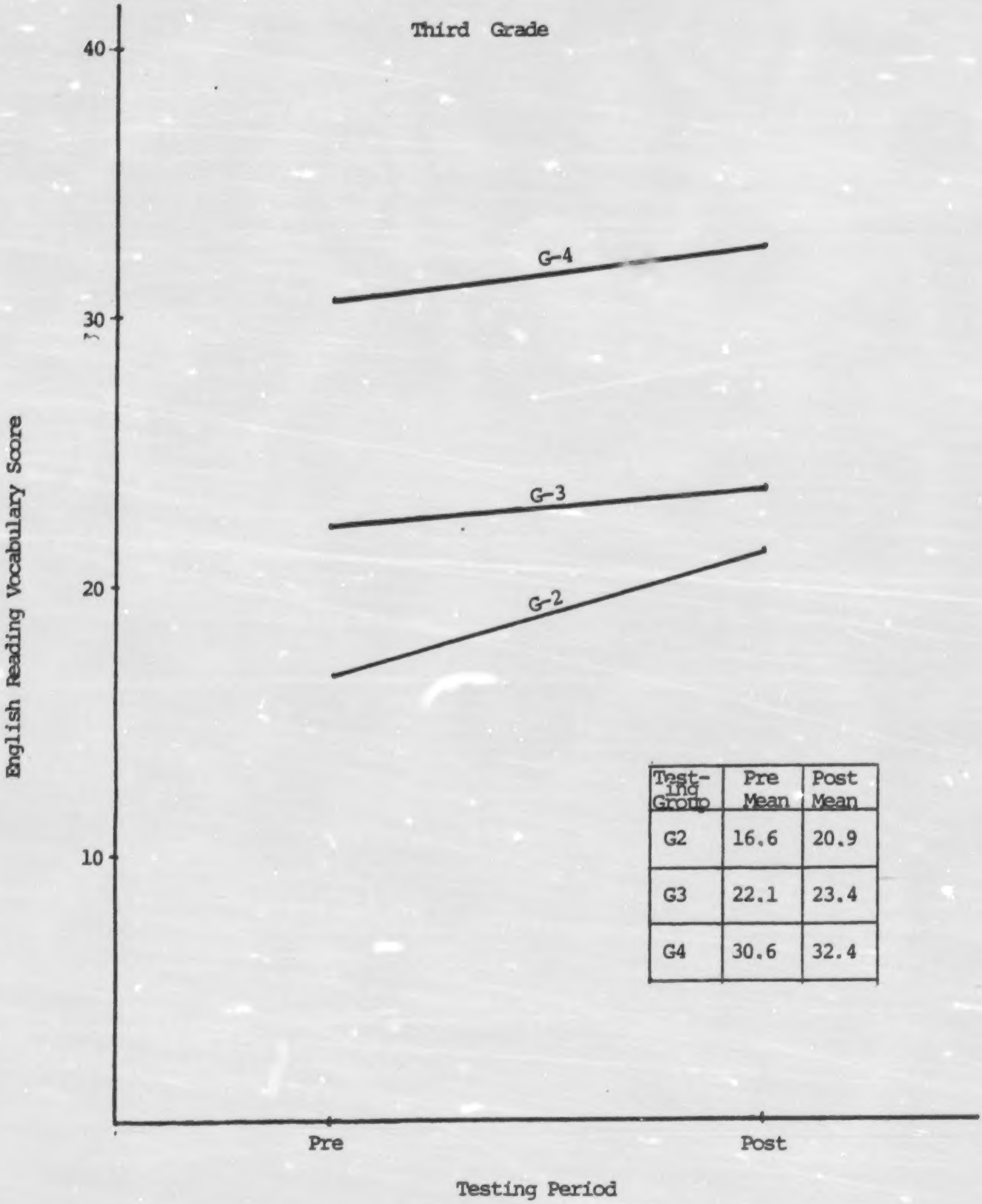


Test-ing Group	Pre Mean	Post Mean
G2	6.00	8.1
G3	6.2	9.6
G4	12.8	14.4

Figure 5

Vocabulary Subtest
Pre-Posttest Gains

Third Grade

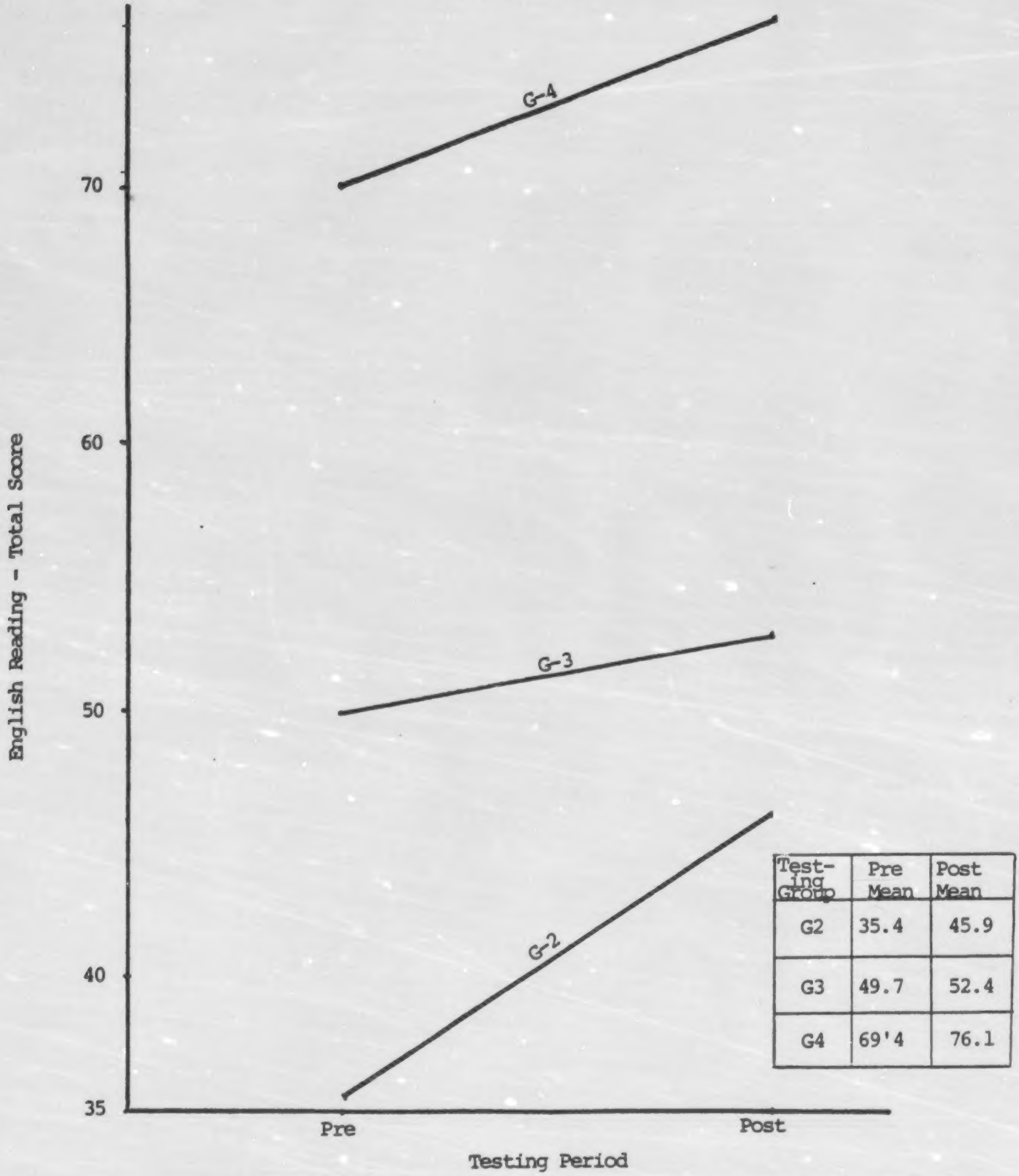


Testing Group	Pre Mean	Post Mean
G2	16.6	20.9
G3	22.1	23.4
G4	30.6	32.4

Figure 6

English Reading-Total Score
Pre-Posttest Gains

Third Grade



Testing Group	Pre Mean	Post Mean
G2	35.4	45.9
G3	49.7	52.4
G4	69'4	76.1

test in Speed of Comprehension. Figure 7 shows group 3 gains between pre- and posttest.

B - Analyses of covariance

Analyses of covariance were carried out to determine significant pre-post effects for the different bilingual groups in English language proficiency in first grade and English language proficiency and reading (total score and subtests) for Grade 3.

1. First grade

An analyses of covariance, using PTLGPROF (Posttest Language Proficiency) as the criterion variable and PRLGPROF (Pretest Language Proficiency) as the covariate, showed no significant group effect but a significant effect of the covariate (PRLGPROF $F=99.24$, $P<0.001$) which accounted for a variance of 48.5%. The analysis showed that although not significantly better, Group 2 did better than Group 1 and 3 and in turn, Group 1 gained significantly least on language proficiency than Groups 2 and 3. Figure 1 shows the slopes describing the changes from pre- to posttest for each bilingual group.

2. Third grade

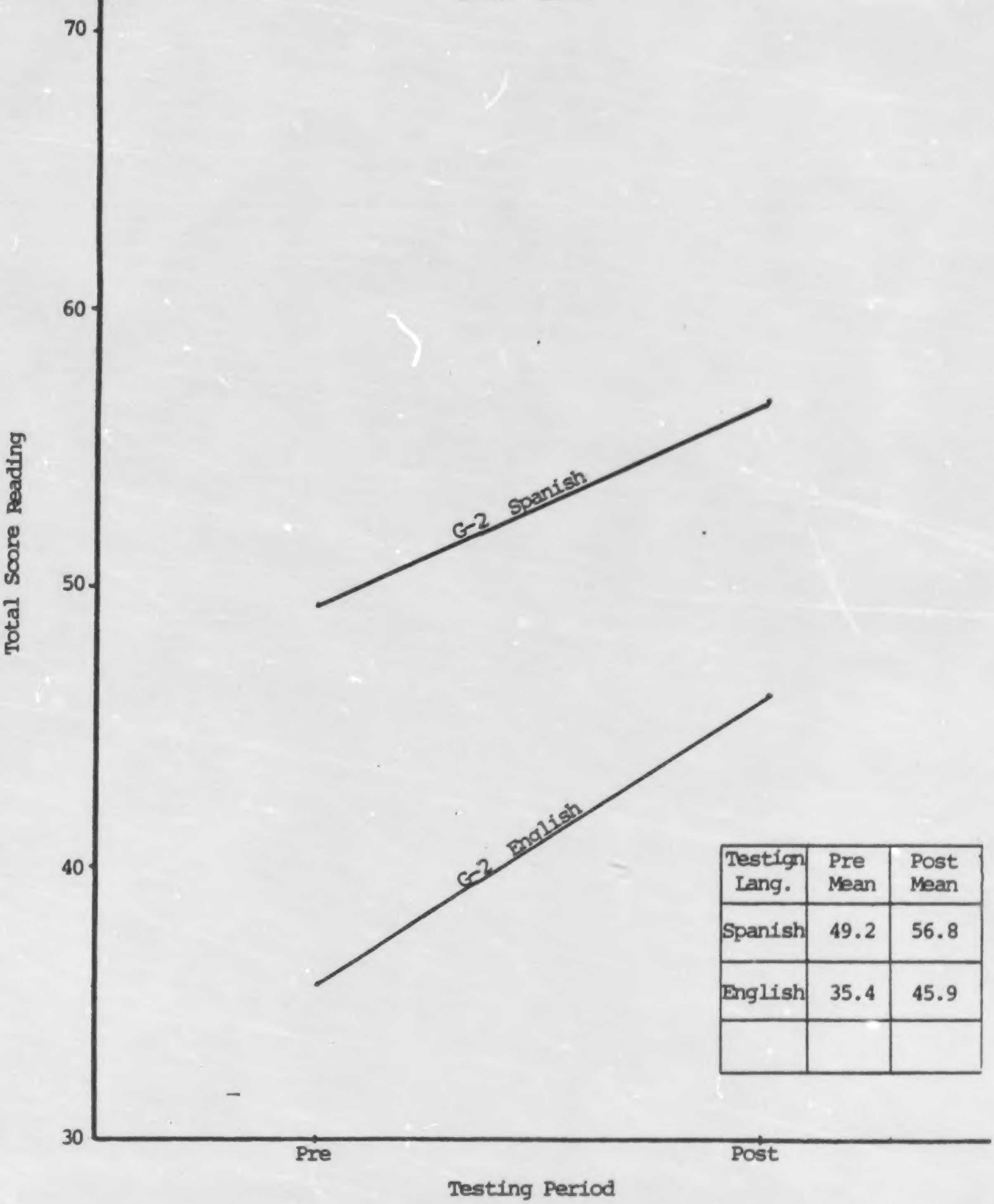
1. Analysis of covariance to determine significance in gains in English language proficiency in third grade showed significant effect of the covariate PRLGPROF (Pretest Language Proficiency $F=57.26$, $P<0.001$) and a main effect of the group ($F=38.47$, P 0.05), where Group 3 performed significantly better than Group 2. The variance explained was 64% and it was significant ($F=30.55$, $P<0.001$). The slopes showing the changes for Groups

Figure 7

Spanish vs English Reading

Pre-Posttest Gains for Group 2 (learning to read bilingually)

Third Grade



Testign Lang.	Pre Mean	Post Mean
Spanish	49.2	56.8
English	35.4	45.9

1 and 3 in language proficiency appear in Figure 2.

These analyses showed that the main source of variation were the covariates.

For PRERPT1 (Comprehension-pretest) F=27.34, $P < 0.001$. The variance explained was equal to 58% and it was significant (F=14.16, DF=2, $P < 0.001$). The covariate PRERPT3 (Vocabulary-pretest) showed a significant effect on the variation explained which was 54% (F=30.75, $P < 0.001$).

Group 3 performed better than Group 2, although not significantly better. There was a significant effect of covariate PRERTOT-pretest (F=83.93, $P < 0.001$) on PTERTOT (Posttest total). No significant effect was found, although Group 2 performed better than Group 3 and 76% of the variance was explained in the analyses.

C - Multiple regression analyses with achievement variables.

1. First grade

Multiple regression analyses were carried out for first grade using the following variables as criterion variables: PTERTOT (Posttest English Reading Total); PTERPT1 (Posttest English Comprehension); PTERPT3 (Posttest English Vocabulary); SPANTOT (Spanish Total) and PTLGPROF (Posttest English Language Proficiency). Whenever a variable seemed to be a significant predictor but the significance was not shown in the stepwise regression data, a calculation of F was carried out using that particular variable individually. This calculation was done by using the procedure which appears in NIE, et al. (1975) pp. 334-340.

Groups 1, 2, and 3 were included in the first grade analyses. The following is a summary of significant results from these analyses.

1. PTERTOT (Posttest English Total). The following predictor variables were introduced in the equation in a stepwise fashion. GAPRT2 (Oral Vocabulary), GAPART4 (Analogies), GAPART1 (Number), GAPART3 (Classification), PRLGPROF (English Language Proficiency), SCTOT (Self Concept), Sex, Age, Group 1, Group 3. The same variables were introduced in the next four analyses. The inclusion of these predictor variables account for 18% of the variance and only GAPART2 (Oral Vocabulary) (F=4.05, DF: 10, 47, $P < 0.05$), and PRLGPROF (pretest English Language Proficiency) (F=2.37, DF= 1,47, $P < 0.05$) accounted significantly for the variance explained.

2. The PTERPT1 (Posttest-Reading Comprehension) multiple regression was carried out using the same predictor variables as above. All these variables explained 21.87% of the variance which showed to be non significant. Variables which accounted significantly for the explained variance were GAPART4 (Analogies) (F=4.42, DF 10,47, $P < 0.05$), GAPART2 (Oral Vocabulary) (F=3.65, DF 10,47, $P < 0.05$), and Group 3 vs. Group 2 (F=2.62, DF 10,47, $P < 0.05$). This significant group effect showed that Group 3 did significantly better than Group 2 in the English reading comprehension subtest.

3. The PTERPT3 (Vocabulary) multiple regression analyses showed that the predictor variables included in the analysis did not explain a significant amount of variance (17.2%). There was only one variable that was significant in explaining this variance GAPART2 (Oral Vocabulary) (F=2.91 , DF 10,47, $P < .05$).

4. The SPANTOT (Spanish Proficiency) regression analysis showed that the predictor variables included in the analysis explained 67.5% of the variance (F=9.65, DF 10,47, $P < 0.01$). Variables which accounted for significant effects on this explained variance were GAPART3 (classification) (F=3.66, DF 10,47, $P < 0.01$); GAPART2 (Oral Vocabulary) (F=2.56, DF 1, 47,

$P < 0.05$); PRLGPROF (Pretest English language proficiency) ($F=9.27$, DF 10,47, $P < .01$); SCTOT (Self Concept Total) ($F=4.30$, DF 10,47, $P < 0.01$); Age ($F=7.42$, DF 10,47, $P < 0.01$); and Group 1 vs. Group 2 ($F=4.47$, DF 10,47, $P<0.01$). The Group 1 variable was a comparison between Groups 1 and 2 and showed an effect where Groups 1 was performing significantly better than Group 2 in Spanish.

5. Finally, PTLGPROF (Posttest English language proficiency) criterion analysis showed a significant degree of variance explained (60% $F=6.95$, DF 10,47, $P < 0.01$). Variables accounting significantly for the explained variance were PRLGPROF (Pretest English language proficiency $F= 12.37$, DF 10,47, $P < 0.01$), GAPART 4 (Analogies $F= 2.74$, DF 10,47, $P < 0.05$) and Age ($F= 3.5$, DF 10,47, $P < .01$)

2. Third grade

For third grade stepwise regression analyses were carried out using PTERTOT (Posttest English reading) and PTLGPROF (Posttest English language proficiency) as criterion variables. The following variables were introduced as predictor variables: PRERTOT (Pretest reading), GAPART2 (Oral Vocabulary), GAPART3 (Classification), GAPART4 (Analogies), GAPART1 (Number), PRLGPROF (Pretest English language proficiency), SCTOT (Self Concept), Sex, Age, and Group. Only Groups 2 and 3 were introduced in this analyses since by third grade very few children received reading instruction only in Spanish (Group 1). Whenever there were variables which seemed to be significant, if calculating the F for that variable individually as explained in Nie, et al.(1975) pp.334 - 340 F was determined and its significance explained.

1. The regression analysis for PTERTOT (Posttest English reading) showed that the predictors included in the equation accounted for 88.6% of

Table 24

Home Variables Included in the Multiple Regression Analyses

MSCHOOL	Mother's schooling
FSCHOOL	Father's schooling
MSPAN	Mother's Spanish
FSPAN	Father's Spanish
MFENG	Mother and Father's English (speaking and reading ability
NCHILD	Number of children in the family
USLIVE	Number of years living in the United States mainland
SPREF	Student's language preference to read, watch TV, and listen to the radio.
MPREF	Mother's language preference to read, watch TV, and listen to the radio.
FPREF	Father's language preference to read, watch TV, and listen to the radio.
FCHLANG	Father to children-language used.
MCHLANG	Mother to children-language used.
CHLANG	Language used by children among themselves
NBORENG	Language most commonly spoken in the neighborhood.
SBIRTHP	Student's birthplace.
SHOMELG	Student's most commonly used language at home.
NBORCOUN	Most common national or ethnic origin of people in the neighborhood.

the variance (F=10.11, DF 10,13, $P < 0.01$). Predictor variables which contributed significantly to the variance explained were PRERTOT (Pretest English reading F=20.33, DF 10,13, $P < 0.01$), GAPART2 (Oral Vocabulary F=3.71, DF 10,13, $P < 0.01$), and Age (F=3.23, DF 10,13, $P < 0.01$).

2. The PTLGPROF (posttest English language proficiency) regression analysis showed that the predictor variables included in the analysis accounted for 65.5% of the variance (F 2.96, DF 9,14, $P < 0.05$). None of the individual predictor variables explained a significant degree of variance unless they were looked at individually (PRLGPROF - Pretest English language proficiency- F 15.9, DF 1,14, $P < .001$, GAPART4 - Analogies - F=3.82, DF 1,14, $P < .05$, and SCTOT - Self Concept - F=2.88, DF 1,14, $P < 0.05$)

D - Multiple regression with home and school variables

A list of home variables and their abbreviations appears in Table 24 The home variables were chosen from among the 58 that appeared originally in the parent questionnaire. An effort was made to choose variables which were not highly correlated among themselves to avoid problems of multicolinearity. Tables 18 and 19 show the variables involved in the analyses discussed here and their correlations.

1. First grade

For first grade, stepwise regressions calculated included all the home variables listed in Table 24 as well as some of the testing variables included in Table 17.

The first analysis was done using PTERTOT (Posttest English reading) as criterion variable. Results from this analysis accounted for 75.4% of the variance but although high this was not significant. The analysis showed the following variables to be significant: SCTOT (Self Concept, F 6.92, $P < .01$), FSPAN (Father Spanish Skills $F=5.51$, $P < .01$), NCHILD (Number of Children in the Family $F=9.33$, $P < .01$), MSCHOOL (Mother's Schooling $F=5.21$, $P < .01$), MFENG (Mother-Father's English Ability $F=12.05$, $P < .01$), CHMLANG (Child-Mother Language $F=7.85$, $P < .01$), CHLANG (Child-Child Language $F=11.95$, $P < .01$), SHOMELG (Student Home Language $F=12.66$, $P < .01$), NBORENG (Neighbors Most Common Language $F=3.1$, $P < .05$), NBORCOUN (Neighbors Ethnicity $F=3.5$, $P < .05$); FCHLANG (Father-Child Language $F=5.4$, $P < .01$), FPREF (Father Language Preference-Reading, Radio, TV $F=4.9$, $P < .01$), SBIRTHPL (Student's Birthplace $F=4.5$, $P < .05$), and Group 3 ($F=5.9$, $P < .01$). All of these variables were significant for 24,9 degrees of freedom. Subsequently, individual analysis with the same predictor variables were done with each one of the subtests of the reading test.

The stepwise regression analysis for reading comprehension, PTERPT1, showed that 57.16% of the variance could be explained with the predictor variables included in the analysis. FSPAN (Father's Spanish $F=2.98$, $P < 0.05$), MFENG (Mother and Father English $F=3.72$, $P < 0.05$), and Group 1 ($F=3.74$, $P < 0.05$) were the only significant variables accounting for this variance at 24,9 degrees of freedom. When hierarchical partial correlations were used, using the procedure given by NIE, et.al. (1975) pp. 334-340 no other variables showed to be significant.

The regression analysis using PTERPT3 (Posttest Vocabulary) as the dependent variable showed an explained variance of 66% which, althoudh high, it was not significant,Individual predictor variables, though, showed a significant effect for DF 24,9 as follows: FSPAN (Father's Spanish $F=10.76$,

$P < .01$), NCHILD (Number of Children in Family $F=5.2$, P .01), SPREF (Student Language Preference, Radio, TV, Reading $F=7.35$, $P < 0.01$), FCHLANG (Father to Child Language $F=5.3$, $P < .01$), MPREF (Mother's Language Preference $F=4.8$, $P < .01$), SBIRTHPL (Student's Birthplace $F=4.73$, $P < .01$).

2. Third grade

For third grade, multiple regression analys's were done using PTERTOT (Posttest-English Reading) as well as the subtests of the reading test (PTERPT1 Posttest Comprehension; PTERPT2, Posttest Speed of Comprehension; and PTERPT3, Posttest Vocabulary) as criterion variables and the same home predictor variables used for Grade 1 (see Table 24)

For PTERTOT (Posttest English Reading), the analyses results accounted for 94% of the variance explained which was significant ($F=33.40$, DF 6,13, $P < .01$). Predictor variables which contributed significantly to this variance explained were PRERTOT (Pretest English reading $F=167.6$, DF 6,13, $P < .01$), GAPART2 (Oral Vocabulary $F=21.96$, DF 6,13, $P < .01$), and FSPAN (Father's Spanish, $F=26.83$, DF 6,13, $P < .01$).

In the case of PTERPT1 (Comprehension), the predictor variables included in the analyses accounted for 71% of the variance accounted ($F=5.37$, DF 6,13, $P < .01$). Predictor variables which were significant at DF 6,13 in this analyses were PRERPT1 (Pretest-English meading $F=26.44$, P .01), FSPAN (Father's Spanish $F=6.68$, P .01), and GAPART2 (Oral Vocabulary $F=4.32$, $P < .05$).

For PRERPT2 (Posttest Speed of Comprehension), the analyses accounted for 56% of the variance which was not significant. Only PRERPT2 (Pretest-Speed of Comprehension) accounted significantly ($F=3.4$, DF 11,8, $P < .05$) for the variance explained.

The analyses using PTERPT3 (Posttest-Vocabulary) accounted for 95% of the variance explained ($F=18.5$, DF 10,9, $P < .01$). Several individual variables contributed significantly to the variance explained at DF 10,9. They were PRERPT3 (Pretest English Vocabulary, $F=52.5$, $P < .01$), GAPART2 (Oral Vocabulary, $F=29.35$, $P < .01$), GAPART3 (Classification, $F=6.4$, $P < .01$), NCHILD (Number of Children in the Family, $F=34$, $P < .01$), MSCHOOL (Mother's Schooling, $F=43.6$, $P < .01$), MFENG (Mother and Father's English, $F=10.12$, $P < .01$), and USLIVE (Number of Years in U.S. Mainland, $F=15.4$, $P < .01$).

VIII. Discussion of results

To facilitate the discussion of findings each question will be discussed separately.

A- Question 1. Do the groups of bilingual children learning to read different language approaches show different effects or patterns?

It is important to point out that the data, for first and third grade, showed no significant difference in socio-economic status and age among the bilingual groups studied. Furthermore, ANOVAS carried out to determine differences among the groups and within grades, in regard to the variables included in the parent questionnaire, showed no significant group differences (see Population section). The main significant difference among the bilingual groups was in English language proficiency. Children participating in bilingual programs were those whose English language proficiency was low according to State and/or Federal guidelines. As such, it is possible that their chances to succeed could be hampered by their participation in an "all English classroom". To determine the children's level of English proficiency, children were either tested or interviewed by the teacher and; according to the results, placed in one of five levels of proficiency. Level 1 is usually described in terms of no L2 proficiency and Level 5 is defined as native-like proficiency in L2. Usually children placed in Levels 1, 2, and 3, according to federal guidelines, should be placed in bilingual education programs. Our data showed that the children in our project were all within these levels of proficiency at pretest. Grouping for reading though, was done mainly by the teachers. Teachers used either their own judgement and/or the district's guidelines to place children in the different groups for reading instruction.

As shown by the data collected (see Tables 20 and 21), children were grouped for instruction in Spanish (Group 1), Spanish and English concurrently (Group 2), or English only (Group 3), according to their incresing proficiency in English. Whatever method (instruments or judgements) the teachers involved in the project used to determine English language proficiency, there was a high correlation between the language proficiency of the student, as determined by the test we used, and the language in which he was learning to read. It seems, though, that children's participation in a particular treatment was decided mainly on the bases of their proficiency in L2. In the case of first graders, the test of General Ability results showed that there were significant differences among the bilingual groups in cognitive skills such as classification and analogies. A comparison of the mean scores (see Tables 20 and 21) showed that Group 1, learning to read in Spanish only, scored lower than the other bilingual groups in these cognitive areas. Cummins (1979) talks of a possible interaction between education treatment and child input factors which should be taken into account when comparing groups receiving different experimental treatments. In the case of children as the ones in Group 1 in First Grade, cognitive areas of development besides language proficiency should have been taken into account when determining the type of bilingual treatment most desirable for them. At present, there seems to be a tendency to teach reading to these children in L1 which could facilitate the development of their first language and furthermore to increase their opportunities for future achievement. The data at hand suggests that there were significant differences; especially between Group 2 and 3 and Group 1 in the area of general ability and self concept (personal domain) Group 1 usually scored lower in these areas. These findings should be considered when looking at outcomes and at the effect of the different language approaches in learning to read.

Very interesting seem to be the differences among the firs grade groups in the posttest where Group 1 showed the lowest proficiency in Spanish. The results may be due to flaws in the administration of the test and/or to the nature of the test itself. Spanish and English items in the test are translations from one to another. The English test was administered too, though not used in the analysis. It may be that the variations in the order in which the Spanish and English tests were given influenced the results. If this was not the case, and children in Group 1 are truly lower in Spanish proficiency than children in Groups 2 and 3, special consideration for program planning should be given to findings from Taukomaa and Skutnabb-Kangas (1977). They found that children who were introduced to a second language before they have developed their first language enough to be able to proceed in school at a normal pace, were hampered in future school achievement. Careful considerations then should be taken into account when planning a program for Group 1 children, when they go to second grade, even if the students show a significant possitive effect in their English language proficiency . These children may not be ready for a concurrent (Spanish-English) or an all English treatment in learning to read. The program planned for them should still emphasize the development of cognitive skills which could facilitate reading and other achievement skills.

Furthermore, if these children were not allowed to learn their native language and they do not learn the second language well, they will present what Skutnabb-Kangas and Toukomaa (1977) call semilingualism and which Cummins (1979) characterizes as the lower threshold level of bilingual competence characterized by negative cognitive effects.

In regard to Groups 2 and 3 in first grade, the results showed that the basic difference they present is in English language proficiency. Although all groups advanced significantly in English language proficiency through the school year, they still showed significant language proficiency differences at the posttest; Group 3 (English only) being the highest and Group 1 (Spanish only) being the lowest in English proficiency. Groups 2 and 3 were comparable in General Ability and oral Spanish proficiency. A t-test done to compare performance in Spanish and English reading for Group 2 showed significant differences in reading comprehension. This group performed better in Spanish than in English in this subtest. This reflects that Group 2 children were still dominant in Spanish while performing not significantly different than Group 3 (English only) in English reading.

In Spanish reading (L1), Group 1 did better in general than Group 2 and 3 did in English (L2) reading. It is important to point out, though that Group 1 was significantly lower in comprehension than the other two bilingual groups. The differences in general ability (classification and analogies) may account for this performance for Group 1 and teachers should note that the students low reading achievement may be due not only to language proficiency differences but to cognitive development problems in comparison to other children their age and from similar cultural and socioeconomic backgrounds.

If the typology of bilingualism used by Toukomaa and Skutnabb (1975) was to be applied to Groups 2 and 3 children, they still showed dominant bilingualism which according to Cummins (1979) does not produce negative or positive cognitive effects in learning and achievement. It is important to point out that although Group 3 was the highest in English language proficiency at pretest and it was receiving reading instruction in English only, they still maintained their Spahish as shown by the Spanish proficiency scores.

In general it is possible to say that it was mainly language proficiency which characterized participation in one group or another. The data collected showed that besides being the lowest in English language proficiency, Group 1 was lower than Groups 2 and 3 in the classification and analogies subtest of the test of General Ability and in Spanish Language Proficiency, and this may hamper their future general achievement. The findings suggest implications for program planning were it seems L2 should be only one of the variables taken into account when choosing the language of instruction in a bilingual classroom. In other words, in planning a program that will benefit a particular type of child, it is necessary to look at the child as a whole and take into account those developmental and affective characteristics which the first grade linguistically different student brings from home and his pre-school environment.

By third grade, it was found that only few bilingual students (2) were receiving reading instruction only in Spanish. These students were newcomers from Mexico and as such knew only Spanish and could read well in that language. For comparison purposes only, as shown in Table 21, Group 3 (learning to read in English only) and Group 2 (learning to read in Spanish and English concurrently) were included in the study by Grade 3. There were not significant age differences among the bilingual groups. In contrast to first graders, there were not significant differences in general ability either. In self-concept, though where only significant differences appeared in the personal domain by Grade 1, there were significant differences in the personal and intellectual domains by Grade 3. Group 3 showed lower intellectual self-concept than Group 2. Could this be due to the insequrity of transition to a mostly English mode of instruction? This is the argument commontly brought up by bilingual educators when explaining similar findings.

In English reading there were significant differences at the pretest for the total score as well as for each subtest score individually. Group 2 scored consistently lower than Group 3. By the posttest, though, no significant differences were found between Groups 2 and 3. Group 2 had caught up to Group 3. Both groups gained significantly from pre- to posttest. Figures 3, 4, 5 and 6 show the English reading trends from pre- to posttest for Groups 1, 3, 4 as shown by their performance in the reading tests administered.

It is important to point out that Group 2 was performing better in Spanish reading than English reading at the posttest. This seem to show that Group 2 children were still dominant in Spanish, but they were performing in English reading at the same level than Group 3 which received reading instruction only in English. In contrast, Group 3 did significantly better than Group 2 in Oral Spanish proficiency. Since the test used for this purpose was given in Spanish and in English and one form is a translation of the other, it may be that the order of administration of the Spanish and English tests affected the results. The order in which the tests were given was not controlled for and a practice effect may have produced the results. Both groups seem to have learned to read in English at similar rates and to have maintained their Spanish. Since Group 3 was not tested in Spanish reading, we do not know if their fluency was in oral Spanish only or if they were maintaining their reading literacy as well. By third grade, it was very hard to control or, at least, to identify the school experiences the children have had before the third grade. In other words, we did not know: 1) if the children attended bilingual programs previously, or not, and 2) if they attended bilingual education programs, which language they were taught to read in, etc. These factors make it very hard to explain any of the effects found. The effect of the children maintaining their L1 while learning L2, seems to be similar for Groups 2 and 3. Although it is impossible to explain this in terms of the reading treatment received in third grade, it only showed a trend toward what Cummins (1979) identified as the second threshold of bilingualism, defined as "additive bilingualism". This state is attained when high levels of proficiency occur in the two languages. It will be interesting to follow up these children to determine if they ever attain "additive bilingualism" and when and under which conditions they attain it. At least, the language proficiency patterns of third grade children in Group 2 and 3 seemed to be a state of dominant bilingualism which Cummins defined as producing neither negative nor positive effects in learning.

In conclusion, the bilingual groups showed some significant differences among themselves. There were differences in language proficiency both in Grade 1 and 3, but there was a trend toward a significant increase in English language proficiency. General ability differences, which appeared in the classification and analogies part of the test in Grade 1, seemed to disappear by Grade 3. It is important to point out that these comparisons were made cross-sectionally and unless a longitudinal study is done following the same children through their school years, these comments are more speculative than real. The change, for example, may be explained in terms of the different intellectual and cognitive characteristics of the two groups of children when they first entered school.

The above comments follow the findings in regard to English reading where the trend was for Group 2 children (learning in both languages concurrently) catching up with Group 3 (bilingual children learning to read in English only) in English reading skills by Grade 3. There is a need to study whether Group 2 children caught up suddenly in third grade or if it was a slow process from first to third grade.

While bilingual Groups 2 and 3 performed at about the same reading level by the end of Grade 3, they were still performing significantly differently from Group 4 ("Anglo"), as it will be discussed in the next section.

B. Question 2. How do the bilingual groups (Group 1, 2, and 3) compare to the "Anglo" group (Group 4)?

When comparing the first grade bilingual children with a group of first grade "Anglo" students, the differences in general ability, self-concept and reading become more obvious and significant. It is important to explain at this point that: 1) there was no significant age differences between the bilingual and "Anglo" groups by first grade, 2) the schools these children attended were all integrated and required Title I funds, and 3) the "Anglo" group was more heterogeneous than any of the bilingual groups in terms of socio-economic status. In other words, while most of the bilingual children were from low socio-economic backgrounds, children in the "Anglo" classes came from low as well as middle class backgrounds.

The children participating in bilingual programs were in these programs because they were not proficient in English, and therefore could not fully participate in an all-English classroom. Besides this obvious difference, the children in the bilingual classroom were different from the "Anglo" group in general ability as measured through the tests described in the Instruments Section (IV B). Although Group 1 was significantly lower than Group 2 and 3 in classification and analogies skills, there were significant differences for all the subtests between the "Anglo" and the bilingual groups.

In the self concept area, when Group 4 compared to the bilingual groups, significant differences were found in the intellectual domain and the total score, besides the personal level which already was significantly different among the bilingual groups. In comparing the data in these areas, it seemed that Group 2 was more similar to Group 4 than were Groups 1 and 3; in other words, the significant differences may be due to the way Groups 1 and 3 perceive themselves. Group 2, which received reading instruction in Spanish and in English, have felt more confortable in a program that took into account their Spanish skills at the same time as they were learning English. Group 3, in turn, may already have felt behind when compared to their "Anglo" counterparts and furthermore that may have affected their view of their own intellectual capabilities. Group 1 may have felt limited by their limited proficiency in English, the language of the school. These findings have implications for program planning so that children may be encouraged to feel better about school and themselves.

In regard to reading skills, the three bilingual groups were significantly different from the "Anglo" group. In first grade, the "Anglo" group performed almost twice as well as the bilingual groups. The main explanation, for first grade, is that the language proficiency as well as general ability and self-concept differences found at the pretest accounted for most of the differences in reading proficiency levels attained by the end of one school year.

In the case of third graders, there was a significant age difference between the "Anglo" and the bilingual groups. This is probably due to retention of bilingual children in lower grades while they were not proficient in English. The effect of retention may explain the differences in self-concept and even in general ability between the "Anglo" and the bilingual groups. It is important to note that the differences in general ability between these groups were in the areas of oral vocabulary and number, but not in the classification and analogies subtests. This may reflect that while bilingual students were at the same level of development of purely cognitive, non-verbal skills with their "Anglo" counterparts, they still lag in language development and in mathematics. In regard to self-concept, significant differences in the Social domain and in the total self-concept appeared between the "Anglo" and the bilingual groups. By third grade, it seems the bilingual child becomes more councious of his cultural and socioeconomic differences in comparison with other children in the school. Knowing that his culture is not the same as that of the school, he may not feel a sense of belonging and may have problems being accepted by other children in the school. It would be interesting to follow some of the bilingual children longitudinally and to determine when in their schooling the difference in the self-concept at the Personal and Social domains appears and what are the factors that may account for this change.

In the case of reading, although there were significant differences among the bilingual groups, these differences were more marked when the bilingual groups were compared with the "Anglo" children (Group 4) for the pretest. By the posttest, it was found that Group 2 (learning to read in Spanish and English concurrently) was performing very similar to Group 3 in reading, still both bilingual third grade groups were significantly lower, in all reading skills tested in comparison to their "Anglo" counterparts. It is important to note that although in Grade 1 bilingual children were performing only half as well as the "Anglo" first graders (see means Table 20) by Grade 3, their scores were relatively higher in comparison to the performance of the "Anglo" groups (see means Table 21). It looks as if there was a tendency for the bilingual children to get closer to the "Anglo" group in reading skills. Would they ever catch up?

Again the idea of a longitudinal study of bilingual children, at different levels of English language proficiency, learning to read with an "Anglo" group as a control, may answer this question. It may be that the trend discussed here which appeared when comparing first and third grade, bilingual and "Anglo" children cross-sectionally, disappears when the same groups of children are followed through the first three grades. As it is, it may be that differences in ability, development, etc, among the children compared, produced the differences obtained in this study rather than the differences resulting predominantly from the school experience itself.

In general, besides the differences in English language proficiency, there were differences between the bilingual and the "Anglo" groups in self-concept and general ability which may account for much of their differences in learning reading. Although Group 2 seemed to catch up with Group 3 in English reading skills by Grade 3, they both are still behind their "Anglo" counterparts in English reading by the end of Grade 3. The idea that the bilingual children may eventually catch up with the "Anglos" remains to be explored in future research projects. Longitudinal studies in this area seem to be the best approach toward answering these questions.

C. Question 3. What are the most relevant student, school, and home characteristics which seem to account for success in learning to read?

To answer this question we carried out multiple regression analyses involving testing variables, age, sex, and group in one case, and these variables plus home variables described in Table 24 in another case, for each first and third grade separately. Significant results of these analyses were described earlier. Since there were differences in the findings between grades, these results will be discussed separately.

1. First Grade

As discussed in the results section for first grade, very little of the total reading score was explained by the testing carried out for this project. Most of the variance accounted for through the analysis can be explained mostly by the student knowledge of oral vocabulary and English (L2) language proficiency at the beginning of the school year. What this seem to show is that for first grade the student oral language development was a prerequisite in learning to read in either L1 and L2. When we looked at the individual subtests, we found that, again, oral vocabulary was related to students achievement in reading comprehension. There is nothing exceptional about this finding. It is important, though, to note that there was a significant correlation between the general ability analogies subtest score and the comprehension score. It seems then, that the process of discovering relations among objects was a requirement for the development of comprehension skills, which may require analytic skills. In regards to language approaches in learning to read, it seems that Group 2 (learning to read in English and Spanish concurrently) was affected the most in developing reading comprehension skills in English (see Figure 3). In the case of vocabulary only, the oral vocabulary development contributed significantly to the explained variance for the reading vocabulary subtest.

Results of the study showed a strong relationship between the Spanish (L1) and English (L2) language proficiency. Self concept seemed to account considerably for the variance explained for language development (L1 and L2). While a high score in analogies skills accounted significantly on English reading comprehension, a high score in the classification subtest accounted for oral language development in L1. It is important to note that Group 1 treatment accounted significantly for the variance explained in the Spanish (L1) language proficiency analysis, while participation in Group 3 did not seem to account for as much of the variance explained for English language proficiency. The English language proficiency the child brought to school accounted significantly for the amount of English he learned a year of school.

When test scores as well as home predictor variables were introduced into the regression analysis, there was a great increase on the percent of the variance which could be explained and which accounted for the effects of learning to read in first grade. Results showed that home environment variables accounted for most of the variance explained in the learning of English reading and adds validity to Cummins' (1979) developmental interdependence hypothesis which tries to describe the interaction between "home factors" (cultural, linguistic , etc.) which the child brings to school, and the educational treatments as influencing children's learning. Our data showed that factors: 1) the father fluency in L1 and L2, his preferred language to read, watch TV or listen to the radio and the language he used with his children, 2) the number of children in the family and the language they spoke among themselves, 3) the level of mother schooling and English ability and language she used with the children, and 4) neighborhood's ethnic and language background (L1 vs L2) accounted for most of the variance explained in the analysis. Self concept accounted significantly for reading achievement among first grade students too. Under these conditions, there was significant effect of Group 3 over Group 2 in terms of the variance accounted. The model that came up was that a child whose parents used more English than Spanish, who lived in an English or mixed neighborhood, who used more English than Spanish at home, and had older siblings, showed better chances to achieve well in English reading when he was taught to read only in English (L2).

For English reading comprehension, the following factors accounted for most of the variance explained: 1) the father's Spanish (L1) ability seemed to have a significant but negative effect in the variance explained 2) both parents' English ability (L2) (speaking and reading) accounted for most of the variance explained. Again there was a significant effect on the variance accounted for by Group 3 over Group 1 in this analysis. It is possible that other less significant variables existed in Group 2 homes, which counteracted the effects of the variance explained by Group 3. No significant variance was accounted for by a comparison between Groups 3 and 2.

In the case of reading vocabulary, it seemed that 1) the father's Spanish ability and the language he talked to the child, 2) the mother's language preference for reading, watching TV, and listening to the radio, 3) the number of children in the family, and 4) the student's language preference and birthplace accounted for most of the variance explained for the vocabulary subtest. The father's Spanish ability had a significant negative effect on learning English vocabulary.

It seems clear then that by first grade it is mostly characteristics of the home environment were the most influential in determining whether the child will or will not learn to read well when taught only in English or not.

Since the measures used in the study have shown to be highly reliable when used with young children (Grades K to 3), it is unlikely that low reliability of testing measures could account for the non-significance of testing factors in accounting for the variance explained through the different analyses.

The father appeared to be a strong figure in determining home language use. High correlations among father home language variables and the mothers and children's use of language at home proved that the father was the one who characterized most of the language preference patterns in the family. It is important to point out here that self-concept, besides these home factors, was a significant predictor of the child's reading achievement in L2 in grade 1.

2. Third Grade

By third grade, as explained before, there exist a problem of control of the nature treatment; for example, it was impossible to control what the child had received before third grade, what he had learned in the previous years of schooling, the language that was used for instruction, and whether or not he had participated in a bilingual program.

Results for the regression analysis with the testing variables showed that no matter which group the student was in (L2 only or L1 and L2 concurrently), the child's knowledge of reading and oral vocabulary development at pretest accounted significantly for the reading achievement the child attained during a year of schooling.

When the home variables were introduced in the analysis, most of the variance for the total reading score was explained by the factors discussed above, except of the father's Spanish speaking and reading ability which had a significant but negative effect in the child's reading performance learning to read. In other words, it seemed that the father, who in many ways was the person who characterized the language use patterns in the home, was a significant source in accounting for variance explained by third grade and, furthermore, in determining the child's achievement in English reading. These same variables accounted for most of the explained variance in the reading comprehension and speed of comprehension subtests analysis.

In the case of vocabulary, the pretest reading vocabulary, oral vocabulary, and the father's Spanish fluency accounted for a great deal of the variance explained. Other significant predictors were classification skills, number of children in the family, mother and father's English, mother's schooling and the number of years the family had lived in the U.S. mainland. All this variables accounted significantly for the variance explained. It seems logical to speculate that a large family living for several years in the United States, where the parents have good command of English reading and writing skills and whose father encourages the use of English at home, and where the mother has enough schooling to be helpful to children in school matters; would greatly facilitate the English reading skills attained by their children by third grade. Of course, by third grade the previous school experiences of the child, especially in the area of reading and vocabulary development, were significant predictors of success in English reading too. As explained before, in the case of this study, it was very hard to control for previous school treatment by third grade and a longitudinal study in the area is needed to determine school variables and treatments which better predict reading achievement in reading at different grade levels.

IX. Implications of the study for bilingual education programs

Several implications can be derived from this study which could affect the future planning and design of bilingual programs.

The first implication that should be emphasized is that, at least at first grade level, teachers should look at other factors than English language proficiency to determine the type of instructional method used in general and particularly in the area of reading. Studies done by Skutnabb-Kangas and Taukomaa (1976) show that first language development is a prerequisite for second language as well as for achievement in general (L1 and L2). Since this study have shown the significant predictive value of home characteristics in students reading achievement, it is necessary to look at the home characteristics of the child to determine which instructional method would benefit him the most.

Besides language proficiency in L1 and or L2 and Home characteristics, it is important to determine the cognitive developmental skills the child has when he begins school. A bilingual program at this point should emphasize not only the linguistics aspects of schooling but the developmental aspects of learning that may enhance the future achievement of the child.

Cummins (1979) has shown enough research evidence to back Skutnabb-Kangas and Taukomaa (1976) findings that different degrees of bilingualism may affect learning in either a negative or positive direction. Bilingual programs should strive toward developing "additive bilinguals" who are able to benefit from the effects of bilingualism. At the same time, careful program planning and model designs should avoid the existance of "semilinguals", Skutnabb-Kangas and Taukomaa (1976), who are adversely affected by the lack of adequate development in either/or both languages (L1 and L2).

X. Implications of the study for future research in reading in bilingual classrooms

The data presented in this study suggests a great need for a longitudinal study of children learning to read. Comparing first and third grade children cross-sectionally, certain trends toward increased English reading achievement were observed. As can be noted, when the bilingual children in this study entered first grade, there were differences among themselves, not only in language proficiency but also in cognitive skills. By the end of third grade though, children in bilingual programs seemed to be moving more toward bilingualism. Then, the differences in reading skills which were obvious at pretest time, for the bilingual third graders studied, disappeared by posttest. This was so in spite of the still significant difference in language proficiency of the children studied. It looked as if "something" occurred by third grade where children learning to read in Spanish (L1) and English (L2) concurrently, who were behind the most bilingual English proficient group (learning to read in L2 only), seemed to have caught up in English (L2) reading with Group 3, learning to read in L2 only. When comparing the bilingual and the "Anglo" groups, we found that by third grade, although Groups 2 and 3 read in English at the same level (as measured by the test administered), they were still significantly behind the "Anglo" group. The gap in scores was closing, though. By first grade, bilingual children were doing only about half as well as the "Anglo" group but by third grade the bilingual children scores, although scoring significantly lower than the "Anglo" group, were performing relatively better than at first grade. Is this a trend toward catching-up with the "Anglos"? Is this ever attained?" Under which conditions?" A cross-sectional comparison such as the one presented here could be misleading. It could be that differences (i.e. home background, IQ, etc) among the groups of children, or the treatments they received, through their school years determined this trend. A longitudinal study of bilingual children at different levels of language proficiency and, maybe, attending different program models who are followed through their schooling and their achievement is compared to a groups of "Anglo" children from similar socio-economic backgrounds, could hopefully explain and certainly validate the existance of these trends. Such a study will shed some light on the questions people constantly ask in regard to the effect of bilingual education on the development and achivement of children attending bilingual programs. Since a longitudinal study involves the same children, most of the problems of controlling for home as well as school treatment variables could be averted.

Another trend identified through the study is that significant age gaps appeared between the "Anglo" and the bilingual groups by third grade. Are these gaps occurring because bilingual students are retained in the same grade more often? What is the effect of retention on the self-concept and achievement of the bilingual children? This is an area which requires research based information yet unavailable.

Finally, the interaction of home and school variables in determining school success should be explored further. This will give practitioners much needed information as to how they can better serve culturally and linguistically different children.

XI. Conclusion

Through this study, the effects that different approaches in learning to read have on the reading achievement in bilingual children was explored. Comparisons among different groups of children (Group 1 learning to read in Spanish (L1) only; Group 2 learning to read in Spanish and English (L1 and L2) concurrently; Group 3 learning to read in English (L2) only, and Group 4, a group of "Anglo" children learning to read in English) determined that the bilingual groups were characterized mainly by their different English language proficiency. Whatever instruments were used to determine this proficiency, the results correlated highly with the language proficiency measures used in the study. When the bilingual groups were compared in general ability and native language (L1) proficiency, differences were found specially between Group 1 and Groups 2 and 3. Group 1 was significantly lower not only in English language proficiency but in Spanish fluency and cognitive skills too. According to Skutnabb-Tonga and Taukomaa (1976) should these children not develop their first language (L1) well before being introduced to the second language (L2) they may become "semilinguals" (not fully proficient in either language) and this may adversely affect their later learning and achievement. From this, it follows that children should be chosen for a particular program model not only in terms of the L2 proficiency shown but in terms of their competence in L1 and their level of cognitive development. Although significant differences were found among the bilingual groups in first and third grade, by the end of the school year it was found that in third grade, the group learning to read in L1 and L2 concurrently seemed to have caught up in English reading skills with the group who was learning to read solely in English. This group, learning to read in L1 only did significantly higher than the "two language" (L1 + L2) group at pretest. Not only did the children in the "two language" group (L1 and L2 concurrently) performed as well as Group 3 (L2 only) in English reading but they also significantly increased their Spanish reading scores from pre- to posttest. Although still Spanish dominant this group, as well as the English (L2) only group, seemed to be moving toward "additive bilingualism" as described by Skutnabb-Kangas and Toukomaa (1976) and which, according to Cummins (1979), can produce positive effects in learning and achievement. In spite of these trends observed at the end of third grade, the bilingual groups still lagged behing the "Anglo" controls in reading achievement. In first grade bilingual students were doing only half as well as the "Anglos", on the average, but the gap was smaller by the end of third grade. The differences between the bilingual students and the "Anglo" group were still significant at posttest, though. Would they ever catch up to the "Anglo" group?. This is a question that should be studied by following bilingual children longitudinally through their schooling and comparing them to an "Anglo" control group.

The predictability value of home and school variables in determining English reading achievement in school was explored. Although a group treatment effect was found for Grade 1 where Group 3 did significantly better than Group 2 it was found that home variables, specially parents' English proficiency and language preference and number of children in the family (among other factors) accounted for most of the variance explained for Grade 1. By grade 3, it was mainly the students' previous English reading and language proficiency which explained this variance, there was no significant group effect. The only home variable that seemed to account for significant variance in reading achievement by Grade 3 was the father's Spanish fluency which affected negatively the learning of reading in English.

Through the analysis of home and school variables, the father emerges as the most relevant family member; the one who determine language usage and language preference (radio, TV, books) at home, factors which seemed to have a direct effect in the child's English reading achievement. On the whole, it seems as if the predictive value of the home variables, which help or hinder English reading achievement, is more valid for first grade than for third grade. By third grade, unless the data is longitudinal, there is no way to control factors such as treatment, language proficiency, etc. through the previous years of schooling and this may account for the variance explained differently.

In general the study was more time consumming and more difficult than expected. The structure of bilingual programs is complicated among other factors; the program models changed considerably even within a school year, and curriculum materials varied significantly. Although information on teacher variables was collected, it was impossible to control for teacher variables in the study. This was mainly due to the fact that some of the teachers have children learning to read in more than one of the treatments in the study (L2 only, L1 and L2 concurrently, and L1 only) in one class and within a grade level. Besides, some of the classes studied were composed of multiple grades and this is an aspect in the design of bilingual programs which should be studied separately. Information collected on the teachers and their classrooms will be discussed in further papers related to this project.

The fact that this was a one year study and comparisons among the grades are made cross-sectionally rather than longitudinally, is one of the weaknesses of the study. It may be that we were dealing with two different sets of populations in terms of ability and language proficiency and some of the trends that were found were a result of possible sample differences.

Another weakness is that probably characteristics of the treatments across groups and within groups should have been checked carefully during the year to determine and confirm their similarities and differences.

One of the strengths of the study is that it was carried out in classrooms. Although this made the control of certain variables impossible, at least it involved the real situation and not a idealized view of the programs and treatments. Doing research in classrooms is neither easy nor perfect but, in spite of imperfections from an experimental research perspective, it makes the researcher more humanistic and realistic. This type of research makes teachers more sympathetic toward research projects and their findings. Furthermore, it may have an effect on their teaching behavior.

Finally, in spite of the weaknesses, this study deals with an area which is rarely researched and it offers some suggestions for effective planning and design of bilingual education programs.

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Appendix A

Parent's Questionnaire

Parent's Questionnaire
Cuestionario para los padres

I. General Information-Información general

1. Student's full name ______________________________

Nombre completo del estudiante ______________________________

2. Who is answering this questionnaire:
Quién está contestando el cuestionario:

- ☐ 1 Father (Padre)
- ☐ 2 Mother (madre)
- ☐ 3 Other (Otra persona) Specify (especifique)______________

3. Place of birth: mother father student
Lugar de nacimiento: madre ___________ padre ________ estudiante ______

4. How long have you and your family lived on the United States mainland?
Hace cuánto tiempo viven en los Estados Unidos propios?

Less than 6 months (menos de 6 meses)	☐ 1
6 months to 2 years (6 meses a 2 años)	☐ 2
2.1 to 5 years (2.1 a 5 años)	☐ 3
5.1 to 10 years (5.1 a 10 años)	☐ 4
10.1 to 20 years (10.1 a 20 años)	☐ 5
All our lives (Toda la vida)	☐ 6

5. How long have you and your family lived in Illinois?
Hace cuánto tiempo viven en Illinois?

Less than 6 months (menos de 6 meses)	☐ 1
6 months to 2 years (6 meses a 2 años)	☐ 2
2.1 to 5 years (2.1 a 5 años)	☐ 3

5.1 to 10 years (5.1 a 10 años)	[4]
10.1 to 20 years (10.1 a 20 años)	[5]
All our lives (Toda la vida)	[6]

6. Where did you live before coming to Illinois. ¿En qué lugar han residido antes de venir a Illinois?

[1] Mexico
[2] Puerto Rico
[3] Cuba
[4] Texas
[5] Florida
[6] Southwest (USA)
[7] New York
[8] Latin America
[9] Other (otro) Specify (Especifique) ______________________

7. What was the last year of schooling completed by:
Hasta qué año escolar ha estudiado:

A. Mother (La madre)	B. Father (El padre)
[0] None (no escuela)	[0] None (no escuela)
[1] Elementary School (Escuela elemental)	[1] Elementary School (Escuela elemental)
[2] Jr. High School los primeros dos años de educación secundaria o Jr. High School)	[2] Jr. High School los primeros dos años de educación secundaria o Jr. High School)
[3] High School (Escuela secundaria)	[3] High School (Escuela secundaria)
[4] University (Universidad)	[4] University (Universidad)

8. What is the occupation of:
Cuál es la ocupación de:

A. Mother (La madre)	B. Father (El padre)
[0] Deceased (muerta)	[0] Deceased (muerto)
[1] Housewife (Ama de casa)	[1] Laborer (Empleado en fábrica, o el campo)
[2] Laborer (Empleado en fábrica o en el campo)	[2] Maintenance (mantenimiento, limpieza)

3 Clerical (Oficina, tienda)

4 Maintenance (Mantenimiento, limpieza)

5 Sales (Vendedora)

6 Nurse (Enfermera)

7 Teacher aid (Ayudante de maestra)

8 Teacher (Maestra)

9 Professional (Profesional)

10 Other (Otro) ______________
____

3 Clerical (Oficina, tienda)

4 Construction (Construcción)

5 Technician (Técnico)

6 Sales (Vendedor)

7 Teacher (Maestro)

8 Professional (Profesional)

9 Retired (Retirado)

10 Disabled (Enfermo o incapacitado para trabajar)

11 Unemployed (Sin empleo)

12 Other (Otro) ______________

9. How many children do you have?
Cuántos hijas e hijos hay en su familia?______________________

10. How many of your children attend (or have attended) a bilingual program?
Cuántos de sus niños atienden o han atendido un programa bilingüe?
____
____

11. Other than the immediate family (mother, father, and children), does anyone else live in you household?
Fuera de la familia inmediata (madre, padre, hijas e hijos), viven otras personas en su hogar?

1 Yes (Sí)

2 No (No)

II. Spanish and English Proficiency (Conocimiento de Español e Inglés)

12. How would each of you describe your Spanish speaking ability? (Circle the appropriate number).
Como describiría cada uno de ustedes su propia habilidad para hablar el español? (Encierre el número apropiado).

mother madre	1. native nativa	father padre	1. native nativo
	2. good bien		2. good bien
	3. adequate adecuadamente		3. adequate adecuadamente

4. very little más o menos	4. very little más o menos
5. do not speak at all no lo hablo	5. do not speak at all no lo hablo

13. How would each of you describe your own Spanish reading ability? (circle the appropriate number).
Cómo describiría cada uno de ustedes su propia habilidad para leer el español? (Encierre el número apropiado).

mother madre	father padre
1. native nativa	1. native nativo
2. good bien	2. good bien
3. adequate adecuadamente	3. adequate adecuadamente
4. very little más o menos	4. very little más o menos
5. do not read it at all no lo leo	5. do not read it at all no lo leo

14. How would each of you describe your own English speaking ability? (Circle the appropriate number).
Cómo describiría cada uno de ustedes su propia habilidad para hablar el inglés? (Encierre el número apropriado).

mother madre	father padre
1. native native	1. native nativo
2. good bien	2. good bien
3. adequate adecuadamente	3. adequate adecuadamente
4. very little más o menos	4. very little más o menos
5. do not speak it at all no lo hablo	5. do not speak it at all no lo hablo

15. How would each of you describe your own English reading ability? (Circle the appropriate number).
Cómo describiría cada uno de ustedes su propia habilidad para leer el inglés? (Encierre el número apropiado).

mother madre		father padre	
	1. native nativa		1. native nativo
	2. good bien		2. good bien
	3. adequate adecuadamente		3. adequate adecuadamente
	4. very little más o menos		4. very little más o menos
	5. do not read it at all no lo leo		5. do not read it at all no lo leo

16. How would you describe the student's Spanish speaking ability? (Circle the appropriate number).
Cómo describiría la habilidad del estudiante o de la estudiante. (Encierre el número apropiado).

1. native
   nativo
2. good
   bien
3. adequate
   adecuadamente
4. very little
   más o menos
5. does not speak it at all
   no lo habla

17. How would you describe the student's Spanish reading ability? (Circle the appropriate number).
Cómo describiría la habilidad de la estudiante o del estudiante para leer el español? (Encierre el número appropriado).

1. native
   nativo
2. good
   bien
3. adequate
   adecuadamente

4. very little
más o menos

5. does not read it at all
no lo lee

18. How would you describe the student's English speaking ability? (circle the appropriate number).
Cómo describiría usted la habilidad de el (la) estudiante para hablar el inglés? (Encierre el número apropiado).

1. native
nativo

2. good
bien

3. adequate
adecuadamente

4. very little
más o menos

5. does not speak it at all
no lo habla

19. How would you describe the student's English reading ability? (Circle the appropriate number).
Cómo describiría usted la habilidad de el (la) estudiante para leer el inglés? (Encierre el número apropiado).

1. native
nativo

2. good
bien

3. adequate
adecuadamente

4. very little
más o menos

5. does not speak it at all
no lo habla

III. Language Usage (Uso de los 2 lenguajes)

20. What language do the parents use most of the time at home?
Qué idioma hablan en casa la mayor parte del tiempo?

mother madre	1	Spanish	father padre	1	Spanish
	2	English		2	English

21. What language do the parents use most of the time outside of the home?
¿Qué idioma hablan más los padres cuando está fuera de su hogar?

mother madre		father padre	
	[1] Spanish		[1] Spanish
	[2] English		[2] English
	[3] Other		[3] Other

22. Do the parents prefer to read in English or in Spanish?
¿Prefieren los padres leer en inglés o en español?

mother madre		father padre	
	[1] Spanish		[1] Spanish
	[2] English		[2] English

23. Do parents prefer to watch English or Spanish programs on television?
Prefieren los padres ver programas de televisión en inglés o en español?

mother madre		father padre	
	[1] Spanish		[1] Spanish
	[2] English		[2] English

24. Do parents prefer to listen to radio in Spanish or in English?
Prefieren los padres escuchar la radio en inglés o en español?

mother madre		father padre	
	[1] Spanish		[1] Spanish
	[2] English		[2] English

25. What language does the student use most of the time at home?
¿Qué idioma habla el (la) estudiante en casa la mayor parte del tiempo?

[1] Spanish

[2] English

26. Does the student prefer to read in English or in Spanish?
El (la) estudiante prefiere leer en español o en inglés?

[1] Spanish

[2] English

27. Does the student prefer to watch English or Spanish programs on television?
¿El (la) estudiante prefiere ver programas de televisión en español o en inglés?

[1] Spanish

[2] English

28. Does the student prefer to listen to the radio in Spanish or English?
¿El (la) estudiante prefiere escuchar radio en inglés o en español?

$\boxed{1}$ Spanish

$\boxed{2}$ English

IV. Language Interaction Patterns - Patrones de uso del lenguaje.

29. In general, what language do you use most often to speak to each other (mother and father)?
En general, en cuál idioma se hablan uno con el otro (madre y padre)?

$\boxed{1}$ Spanish

$\boxed{2}$ English

$\boxed{3}$ Other

30. In general, what language do parents use to speak to their children?
En general, en cuál idioma le habla a sus hijos?

Father	Mother
$\boxed{1}$ Spanish	$\boxed{1}$ Spanish
$\boxed{2}$ English	$\boxed{2}$ English
$\boxed{3}$ Other	$\boxed{3}$ Other

31. In general, what language do your children use to speak to each other?
En general, en cuál idioma se hablan sus hijos el uno con el otro?

$\boxed{1}$ Spanish

$\boxed{2}$ English

$\boxed{3}$ Other

32. In general, what language do your children use to speak to:
En general, en cuál idioma le habla a usted sus hijos?

Father	Mother
$\boxed{1}$ Spanish	$\boxed{1}$ Spanish
$\boxed{2}$ English	$\boxed{2}$ English
$\boxed{3}$ Other	$\boxed{3}$ Other

33. Are there any regular exceptions to these patterns? (For example, does one child speak Spanish to a younger brother or sister, but mostly English to an older brother or sister)?

¿Hay excepciones regulares a estos patrones? (Por ejemplo, alguno de los niños le habla en español a uno de los hermanos menores, pero inglés en mayor parte a los hermanos mayores)?

Explain
Explique ____

V. Neighborhood and Bilingual Program (Lugar de Residencia) programa bilingüe.

34. Is the neighborhood in which you live primarily Spanish-speaking or English-speaking?
En el barrio en que ustedes y sus hijos e hijas viven, los vecinos hablan generalmente en español o en inglés?

- 1 Spanish (español)
- 2 English (inglés)

35. What country are most of your neighbors from?
¿De qué país son la mayoría de sus vecinos?

- 0 Don't know (no sé)
- 1 Mexican (Mejicano)
- 2 Puerto Rican (Puertorriqueño)
- 3 Cuban (Cubano)
- 4 US. Anglo (EEUU blancos)
- 5 U.S. Black (EEUU negros)

36. What do you think is the main purpose of the bilingual education program?
¿Cuál piensa Ud. qué es el propósito principal de el program de educación bilingüe? (Marque sólo un número)

- 0 Don't understand (no entiendo)
- 1 To have pride in Spanish heritage (hacer a los niños orgullosos de su cultura nativa)
- 2 To learn basic skills (aprender las destrezas básicas)

3 To teach kids in their own language (enseñar a los niños en su lenguaje nativo)

4 To get a better education (recibir una educación mejor)

5 To learn both languages (aprender los dos lenguajes)

6 To learn English but maintaining native language and heritage (aprender Inglés pero manteniendo el español y la cultura nativa)

7 Other (Specify) - Otro (especifique)________________________

37. Why do you want your child to receive bilingual education?
¿Porqué quiere Ud. que su niño (a) reciba educación bilingüe?

0 Don't understand (No entiendo)

1 So that he knows who he is and have pride in self and culture (para que el niño conozca su origen y se sienta orgulloso de si mismo y su cultura)

2 So that he/she learn basic skills in Spanish and English (para que pueda aprender las destrezas básicas en Español e inglés)

3 So that he/she can learn English (para que pueda aprender inglés)

4 So that the child doesn't have the same problems the parents had when they came to this country. (para que el niño no tenga el mismo problema que los padres tuvieron al venir a este país.)

5 To have better opportunities in life and a better self-image (para mejorar las oportunidades del niño y guardar una imagen personal más positiva)

6 To learn Spanish better (para aprender español mejor)

7 Other (specify) otro (specifique) ________________________

38. If this is the first year your child is enrolled in a bilingual program, why was he not enrolled previously?
Si éste es el primer año que su niño(a) a sido matriculado en un programa bilingüe, porqué no fue matriculado antes?

$\boxed{1}$ The child was too young for school (el niño no estaba en edad escolar)

$\boxed{2}$ Never heard of the program before now (no supe del programa antes este año)

$\boxed{3}$ Was not living in Illinois (no vivía in Illinois)

$\boxed{4}$ Did not realize the value of the program (no me daba cuenta del valor del programa)

Appendix B

Teacher's Questionnaire

Teacher Questionnaire
Bilingual Reading Project

There are parts of this questionnaire which concern all teachers in the project, others relate only to bilingual teachers. Fill out the parts that concern to you. If you are a bilingual teacher fill out the whole questionnaire unless otherwise specified.

I. Personal Data

1. Name:____________________ 2. Date:____________________

3. School:____________________ 4. District:____________________

5. Grade:____________________

6. Age Group.

☐ 20-30 years old

☐ 31-40 years old

☐ 40-over

7. Highest Degree Completed.

☐ B.S.

☐ M.S., M.A., M.Ed.

☐ Ph.D.

☐ Other (Specify)

8. Did you take specific courses on reading during your training?

☐ Yes ☐ No

9. If yes, how many courses did you take?

☐ 1

☐ 2

☐ 3 or more

10. How do you describe these courses?

☐ Methodology to teach reading

☐ Psychology of reading

☐ General reading principles

☐ Advance reading

☐ Other ________________

11. How many years of teaching experience do you have?

☐ 1-3 years

☐ 3-5

☐ 5-10

☐ 10-over

Questions 12 thru 18 for bilingual teachers only.

12. How many years have you participated in the bilingual program?

In your district:________years Elsewhere:________years

13. What type of bilingual program do you teach in? (Circle the appropriate number).

[1] 1/2 day-bilingual

[2] tutorial-pull out

[3] self contained-bilingual

[4] team teaching

[5] Other (Specify)________

14. What languages do you speak?

[1] Spanish

[2] English

[3] Russian

[4] German

[5] French

[6] Portuguese

[7] Italian

[8] Other (Specify) ___________

15. How would you rate your spoken ability? (Circle the appropriate number).

☐ native

☐ good

☐ adequate

☐ very little

☐ do not speak at all

16. How would you rate your spoken English ability? (Circle the appropriate number).

1 native

2 good

3 adequate

4 very little

5 do not speak at all

17. Using the same scale, how would you rate the spoken English ability of the other adults in your class listed in question #16. (1-native, 2-good, 3-adequate, 4-very little, 5-does not speak at all).

ADULTS	LANGUAGE ABILITY				
1	1	2	3	4	5
2	1	2	3	4	5
3	1	2	3	4	5
4	1	2	3	4	5

18. Using the same scale, how would you rate the spoken Spanish ability of the other adults in your class listed in question number 16. (1-native, 2-good, 3-adequate, 4-very little, 5-does not speak at all).

ADULTS	LANGUAGE ABILITY				
1	1	2	3	4	5
2	1	2	3	4	5
3	1	2	3	4	5
4	1	2	3	4	5

II. Classroom Data

19. How long has the bilingual program been in effect in your district?_______________. In your school?_______________

20. How many children do you have in your current classes? Age range,grade level:____

21. How many children in your class are participants in the bilingual program? (English teachers only)_______________.

22. Approximately how many pupils in your class fall into each of the following linguistic categories? Check the appropriate boxes.

English speakers ☐

English dominant ☐

Bilingual ☐

Spanish dominant ☐

III. Program

23. Describe your class schedule in as much as possible - including subjects, special classes (ie., gym, art or music and class breaks (ie., lunch, rest time, etc.)

	Monday	Tuesday	Wednesday	Thursday	Friday
9:00					
10:00					
11:00					
12:00					

continued on next page

	Monday	Tuesday	Wednesday	Thursday	Friday
1:00					
2:00					
3:00					

24. What teaching method or methods do you use in your class? Check the appropriate method (s).

programmed instruction	1
special pupil-need groupings	2
interest groupings (ie. all students interested in sports)	3
individual tutorial sessions	4
total-class groups	5
other (specify)	6

25. If you use grouped instruction, are the groups different for different subjects? What is the criteria for grouping (ie., metropolitan reading readiness scores). Specify:____________

26. During what activities do you observe the bilingual children to:

a. speak English predominantly ________________________

b. speak Spanish predominantly ________________________

c. engage in mixed language conversations ________________

Teachers in the all English classrooms go to Section IV, question 46 on p. 10

This section is for Bilingual Teachers only

27. In each of the following areas, what language or languages are used for instruction. Place a check mark in the appropriate box.

	Spanish Only	Mostly Spanish	Spanish same as English	Mostly English	English Only
Arithmetic					
Arts & Crafts					
English Language Arts					
Music					
Science					
Social Studies					
Spanish Language Arts					

28. What language do you generally use in class:

(a) demands (ie., please close the door)

(b) directions (ie., pass in your papers)

(c) informal conversations with students.

29. Do you mix languages often - in what context?

30. Aside from yourself, are there any other adults participating in your classroom?______________________________

How many? ______________. If yes, what is their function? (i.e., teacher aide, parent volunteer, etc?)

1 Teacher aid

2 Team teacher

3 Teacher

4 Parent

31. What is the ratio of students to adults in your class (es).

____

32. Approximately what percent of the entire school day do the pupils in the bilingual program actually spend in the bilingual classroom?________________________________

33. When in the bilingual classroom is Spanish primarily used? (Circle the appropriate number).

1 for Spanish language arts instruction only

2 As a medium of instruction only (all subjects).

3 for general classroom interaction

4 1 and 2 only

5 1, 2 and 3

34. The students who have been in the bilingual program since its inception received beginning reading instruction: (Circle the appropriate number).

1 exclusively in English

2 exclusively in Spanish

3 In English and Spanish concurrently

35. For these same children, describe their reading curriculum developmentally with regard to language of instruction. At what point (s) does the instructional language change or vary?

1 By 3rd grade

2 When student has developed an oral based in the language he is to read

3 When child develops 2nd grade reading level in Spanish

4 In second grade

5 Reading is taught concurrently in both languages

36. For students now entering the bilingual program, has the reading curriculum changed?

1 Yes

2 No

If yes, how is different?

1 Curriculum totally in Spanish

2 Begin reading in Spanish and English concurrently.

3 First oral language, then a special reading series.

[4] Child spends the whole day in a bilingual atmosphere

[5] They are in the same reading program as the other children.

[6] No change

37. What curriculum materials are used in your school for English reading and Spanish reading?

A. English

[1] Scott Foresman
[2] Harcourt Brace
[3] Harper and Row
[4] Lippincoltt and Holt
[5] McGraw Hill
[6] DISTAR
[7] Ginn Series
[8] Bank Street Series
[9] Lyons and Carnahan
[10] Young American Basic Reading Series.
[11] Houghton Mifflin
[12] MacMillan
[13] Highway Holiday Series
[14] The Economy Rog. Program
[15] R.O.L.L.
[16] Laner Blosser
[17] Other (Specify)____________________

B. Spanish

[1] Spanish Roll
[2] Laidlaw
[3] Santillana Series
[4] Método Onomatopéyico
[5] Lee y trabaja
[6] Cartilla Fonetica
[7] El Nuevo Sembrador (Espinos)
[8] Preparándose para leer
[9] Laner Blosser
[10] Other

38. What teaching method or methods do you use in your class? (Circle the appropriate number)

- 1 programmed instruction
- 2 special pupil-need grouping
- 3 interest groupings
- 4 individual tutorial
- 5 total class groups
- 6 other (specify)

39. Do you group children for reading instruction?

☐ Yes ☐ No

40. If yes, what criteria do you use to group the children?

41. What percent of pupils in your classes fall into each of the following ethnic categories?

Ethnic background	Number
Mexican American	
Puerto Rican	
Cuban	
Other Spanish speaking	
Anglo	

42. In the bilingual classroom, approximately what percent of the time do you speak Spanish? (If there is more than one teacher or adult in the room, give the average)__________

43. In the bilingual classroom, approximately what percent of the time do the children use Spanish?__________

44. Do you specifically encourage all Spanish, all English or mixed language use within the bilingual classroom?

- 1 Spanish
- 2 English
- 3 Mixed

45. Mark the classroom contexts in which you speak:

Mostly English	Mostly Spanish
[1] General instructions	[1] General instructions
[2] Open discussion	[2] Language arts Spanish
[3] Art	[3] Social studies, math
[4] English as a second language	[4] Explanations to Spanish dominant children
[5] Remedial work	[5] Reading and spelling
[6] When speaking to English dominant students.	[6] Stories and culture.

Mixed Languages

[1] Informal conversation
[2] Giving directions
[3] In ESL
[4] Social Studies, Science, Math
[5] Culture
[6] Concepts that can not be explained otherwise

IV. Teacher Views (All teachers)

46. Is this year's class different form classes you've had in previous years? How so? Do you like your present class?

47. How would you compare your bilingual students to the other pupils in your class? (English teachers only).

48. What do you perceive to be the major goals of the bilingual program in your school, with respect to your pupils' needs. Mark as many as 3 goals.

1 Learn about Latin countries and culture

2 Culture Enrichment

3 ESL

4 Maintenance of native language

5 Learn English

6 Remedial instruction

7 Help children function well in both cultures and using both languages

8 Achievement at average rate for their age.

9 Produce an athmosphere conducive to growth. (i.e. cognitive, self-esteem, physical, emotional, etc.)

10 To learn to read in the 2 languages

11 Develop pride in cultural heritage

12 Transition toward an all English programs.

13 Other (Specify)____________________________________

49. Have you recognized any differences or changes in your bilingual students as a result of their participation in the bilingual program? Mark as many as 3 differences or changes.

1 Better self-concept

2 More desire to share knowledge with other classmates

3 Children are more willing to speak Spanish

4 Speak English better

5 Do better in all subject areas

6 Better attitudes, happier

7 Improvement in oral and written communication

8 Enhanced pride in culture and language

9 Lower absenteeism rate

10 Nothing